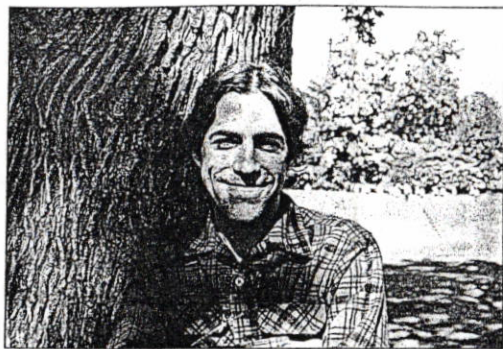




Karen A. Murphy

SYSTEMS OF LIVING SPACE

Joseph Provey

For the building of inexpensive, portable, animated wood furniture you can feel truly at home with, here is a book of ideas and instructions. In clear, easy-to-follow language, it tells even the inexperienced handyman or woman how to make desk lofts, floating beds, swing-set bookshelves, fantasy closets, conversation webs, craftkitchen wagons, and other components for liberated living.

Beginning with a fully illustrated discussion of tools, materials, and techniques, Joseph Provey introduces his basic X-frame method of construction, featuring variations with ladders and casters, shelves and poles without joints, cloth-stretched shelving, strap seats, and convertible sofas and hammocks. Included are detailed notes and examples of his various systems, along with shopping lists and suggested layouts for such limited areas as sleeping rooms, studio apartments, or small cottages.

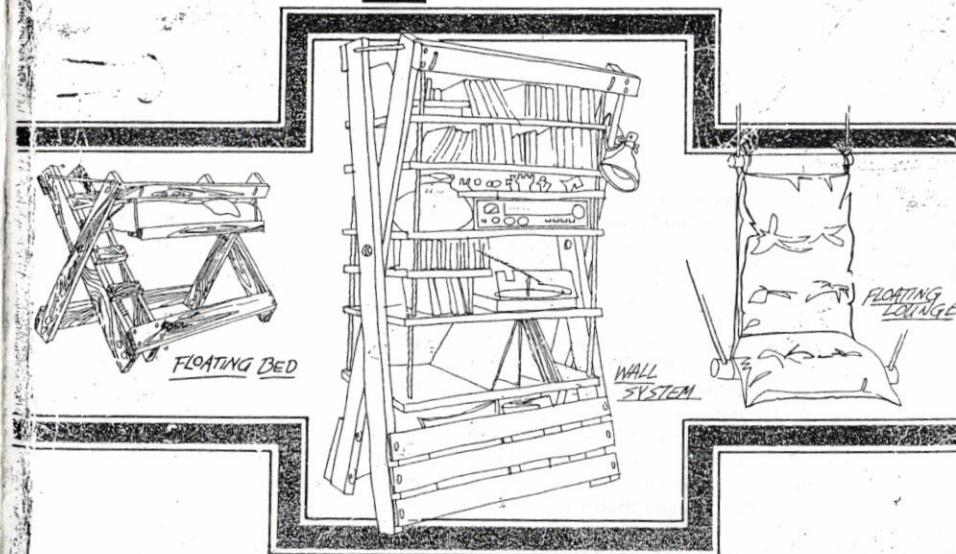
Devised as an alternative to the more conventional furniture of our time—the Colonial repros, the venerable (but cranky) antiques, the busty, big-thighed Victorians, and the plastic institutional look—*Systems of Living Space* is a sensible response to today's demand for warmth, security, and attractiveness.

Joseph Provey wrote and illustrated *The Old New England Crafts Book*. A former editor, he is now a free-lance writer, illustrator, and cartoonist living in Darien, Connecticut.

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systems of living space



A guide to building nests for people —
desk lofts, swing set bookshelves, floating beds, conversation webs,
and other components for liberated living
Joseph Provey

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Moving from the real to the ideal, I've ventured to superimpose people nests on living space inspired by Thoreau's dream house—at the risk of scaling down his cosmic metaphor and perhaps taking it too literally. The center of his "vast, rude, substantial, primitive hall" might be occupied by a common hearth, stove, and/or other heat source—maybe the recently developed solar-heat storage tanks. A large double sink would complete the vital life-support nucleus.

Orbiting the heat/water axis are a craftkitchen wagon and a floating bed. Less essential systems like conversation webs, study nests, and wall-system membranes would occupy the outlying quadrants—and yet "all the treasures of the house" could still be seen at one view.

Wings for children (who would be the real test of people nests) and toilet facilities (if you don't believe in outhouses) might flank this parent super-system and be umbilically tied to its life-support functions. The children's wings would also be composed of desk lofts, craft wagons, floating beds or bunks, and storage, all specially adapted to their smaller users. Plenty of window-illuminated open spaces, scattered with soft rugs or mats for stretching out and rolling around, would complete the children's wing and perhaps leave them room for their own self-styled systems.

The "necessary furniture and utensils" of such a dwelling place would truly be the "chief ornaments." In this dream house, systems could grow to unprecedented heights and not be relegated to the squat, double-tiered versions determined by conventional shells.

Perhaps it's a dream that will never materialize. Most of us have already bolted the doors to our fellow "weary travellers," and have come to believe too strongly in brick and cement. Perhaps our fear of "tempestuous nights" has overridden our love for each other, and we will henceforth sit huddled, ready for the last huff that will blow over our mean little cells, once and for all.

Or perhaps we'll throw open our doors, tear out our ceilings and walls—and try to build our nests as sensibly as birds.

Introduction

People Nests

Systems of living space are like birds' nests built for people: light and airy, but also warm and secured against the winds—or like the first little pig's house, built of straw because he realized that brick is of little use in keeping out the wolves of the psyche. People nests reflect people's needs and hopes for a better quality of life—a quality not measured by consumption. Nests treat resources ecologically, like a bird gathering twigs and other precious bits of organic fluff, and are unburdened by today's concrete conventions of interior space.

Systems of living space respond to the shape of the body (whatever your shape may be) and are sympathetic to moods. They are places in which to cry or laugh, to make friends, make love, or simply make believe. They are tactile webs to live in or above, upon, below, or beyond; and they were inspired by the flannel-pajama memories of secret childhood places. Thoreau's image of his cabin as "a sort of crystallization around me" provides a thematic guiding star.

Thanks, Deb

This book was written to share some discoveries made while exploring ways to satisfy the humble needs and express the joys of our existence. Deb woke me up to the reality that we could not live forever with the redwood

patio furniture we had pulled from my parents' crawl space. We realized then that the topography of our mutually shared space affected our dispositions as directly as a blue sky raises a smile.

When we began to look for alternatives, they all seemed unsatisfactory. For a while, we were torn between compulsively cluttering the place with a lot of Colonial repros or being the sort of purists who choose to resuscitate and pamper those venerable (but cranky) antiques that would probably prefer to be left resting peacefully in the dark loft of a Vermont barn.

Bustly, big-thighed Victorian pieces were out of the question. The institutional look was too indifferent and sterile—and how long can one be polite to plastic cubes or civilized in jungles of wicker? We wanted a place that would make others feel at home—but, more importantly, would make us feel at home: a place that would work with and not against us.

Perhaps the most human reaction we have seen to the furniture dilemma is that of friends who adopt the homely orphans populating the back rooms of Goodwill and The Salvation Army. However, all those conflicting personalities are like grumpy visitors from another decade, frayed at the sleeves and perhaps a little shocked at the New Morality.

Cinder blocks, fiberboard, and orange crates are also plausible alternatives to mass-produced petrification. They won't trap you in chasms of monthly installments, and are to some extent expressive. But, like card houses, they are not easy to move and are a little too unsteady to live with for long.

A Tag Sale in the Head

We need a fresh start: a big tag sale of the preconceptions in our heads. It's time to get rid of the conventional cumbersome sofas and musty bookcases, along with back-breaking bureaus, coffin-shaped desks, and bony-ribbed chairs. Nothing is sacred, not even the ingrained ideas about bedding (beds should fly like pirate ships from Never-Never Land. See chapter on floating beds).

Spatial expression should involve more than isolated furniture-objects, inflexibly arranged according to vaguely construed functions. A coffee table, for example, should be more than a surface to serve art books on, and chairs are for many things besides sitting. They may nurture the birth of an idea—or, when compatibly grouped, they may become the stage for an exhilarating conversation and the incitement of a friendship—the "sitting" is incidental.

Dead Space versus Living Space

It is almost as if there are two kinds of psychic space in which people more or less live—a dead and insecure space that crumbles whenever you question its reality, and space that inspires and renews. Dead space swallows you up into the kind of darkness that makes you feel insignificant and lost. Its cold and unfamiliar emptiness has little to do with human dimensions. It is abysmal, without any human coordinates upon which to hang your soul. It is centerless, with no place to rest your spirit.

Living space, on the other hand, is perceived and created by the sunbursts of the imagination, instead of by the sterile blueprints of convention. Living nests are not built of anonymous boards. Each knot and grain pattern

Conclusion: Dream Systems

I sometimes dream of a larger and more populous house, standing in a golden age, of enduring materials, and without gingerbread work, which shall still consist of only one room, a vast, rude, substantial, primitive hall, without ceiling or plastering, with bare rafters and purlins supporting a sort of lower heaven over one's head . . . a cavernous house, wherein you must reach up a torch upon a pole to see the roof; where some may live in the fireplace, some in the recess of a window, and some on settles, some at one end of the hall, some at another, and some aloft on rafters with the spiders, if they choose; a house which you have got into when you have opened the outside door, and the ceremony is over; where the weary traveller may wash, and eat and converse, and sleep, without further journey; such a shelter as you would be glad to reach in a tempestuous night, containing all the essentials of a house, and nothing for housekeeping; where you can see all the treasures of the house at one view, and everything hangs upon its peg that a man should use; at once kitchen, parlor, chamber, storehouse, and garret; where you can see so necessary a thing as a barrel or a ladder, so convenient a thing as a cupboard, and hear the pot boil, and pay your respects to the fire that cooks your dinner, and the oven that bakes your bread, and the necessary furniture and utensils are the chief ornaments. . . .

Henry David Thoreau, *Walden*

(having slumbered for many ring-years in dark woodlands) reveals itself as unique. Living space is measured more in smiles and tears than in linear feet. In time, it comes to reflect our own perceptual ribs and the tissues of our emotions.

The Space of the Child

It's interesting to note that children are rarely satisfied with the rigid spatial conceptions of adults. Invariably they attempt to resurrect moribund interiors by collecting all the bolsters in the house and fashioning burrows or by flinging old sheets over chairs and tables.

When my brothers and I were small we transformed our playroom into a magic land of pillow castles and block houses. On days when our parents were not in the mood for a spatial metamorphosis, we resorted to searching out "nooks-of-coincidence" and sat squashed together in a small hollow beneath the stairway, or under a corner table, or simply tented in our beds under the strata of sheets and blankets.

The outdoors also abounded with naturally formed hollows only the kids in the neighborhood knew about. Before we ever got to kindergarten, we were skilled at constructing lean-tos and insulating all the chinks with leaves. There was something very reassuring about sitting on flat round stones in a self-made lean-to with tiny pinholes of dusty light sifting into your eyes and nose and the whispers of crowded playmates rustling in your ears. We were always looking for rock-formed caves, piles of snow to dig tunnels in, and vine-veiled lairs in the woods—but, if need be, we were very good at imagining walls that were merely signified by rows of stones.

Human spaces are thus constellations of the mind and memory as much as they are touchable, three-dimensional structures of objectivity. In this spirit, people nests, like children's playhouses, revert to the most basic human spatial requirements, leaving the rest to creative improvisation. Emotional architecture is not sacrificed to artificial interior decorating. Childhood images of cocoons and fish nests, turtle shells and frogs' eggs, help awaken us to the fact that we don't need to latch on to so much to be spatially happy. Perhaps if we look at our psychic shells through the eyes of the child locked within, we will be able to dissolve the mental constrictions that imprison us.

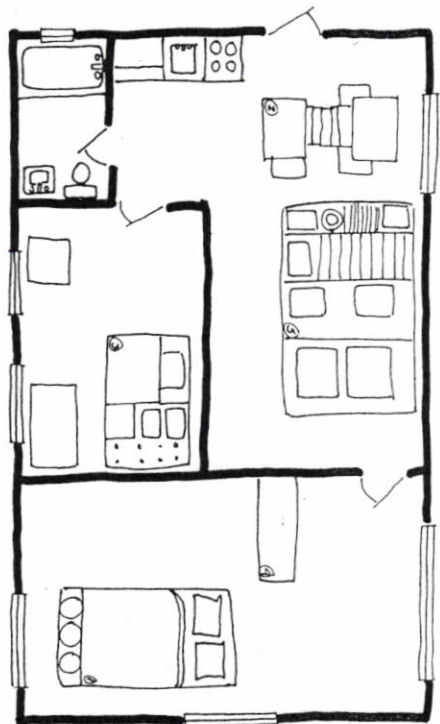
Conclusive Advantages

The designs incorporated here are flexible enough to be healthy for a number of lifestyles. Nests that involve climbing and utilization of ceiling space would not be attractive to most elderly people who have a hard time climbing, although I've met some nimble senior citizens who would have no trouble. On the other hand, the fact that the systems are mobile, relatively lightweight, and come apart into manageable components is a blessing to anyone, young or old, who is tired of pulling around one-ton sofas, bureaus, and bedsteads every time the floor has to be washed or the walls painted.

People nests are also advantageous for singles and young couples who are either creating their own spaces for the first time or merging their spatial conceptions into one they can both live with. For our mobile society of leapfroppers, these systems are collapsible, convertible, multifunctioned, free-standing (no damage to walls or ceiling), and adaptable to almost any

living situation, whether it be a cottage, a microscopic studio apartment, or a dormitory room. Large families with numerous young ones will also benefit from these durable systems, which get maximum use from minimal space.

Nests are between fifty and ninety percent less expensive than their rough equivalents in conventional furniture—and they are not depreciating lead sinkers on the end of a string of installments. Simple to build, they involve the creative participation of your whole body. Everyone who has laced a shoe, turned a screw, hung a picture, and pushed the button of an electrical appliance has a better than even chance of mastering the skills involved in building nests.



SMALL COTTAGE LAYOUT

- ① FLOATING BED WITH PLANT RACK
- ② CRAFT/KITCHEN WAGON
- ③ DESK LOFT
- ④ FANTASY CLOSET
- ⑤ CONVERSATION WEB

Figure 76

Small Cottages or Apartments

This super-system gets maximum use from a three-room floor plan (figure 76). It provides autonomous study areas, plenty of storage, a combination food preparation and eating surface, and a place to get together with friends (and put them up overnight)—and, simultaneously, it preserves large reservoirs of open space for things like looms, sewing machines, easels, and exercises.

Studio Apartments

A craftkitchen wagon works well in studios with tiny kitchenettes (figure 75). It provides extra storage and surface space—and it can be rolled into a corner when not in use.

The open end of a floating bed (storage variation) houses a floor-to-ceiling library and at the same time shields bed space from the entranceway.

The X-brace of a desk loft combines with the upper tie of a floating bed to support a convertible sofa and a series of hanging plant racks. A strap seat is added to the bed tie, and supplementary seating also contributes to the materialization of a frameless entertainment area.

STUDIO APARTMENT

LAYOUT

- ① FLOATING BED
- ② CRAFTKITCHEN WAGON
- ③ DESK LOFT
- ④ MEDIA MEMBRANE
- ⑤ FRAMELESS SEATING

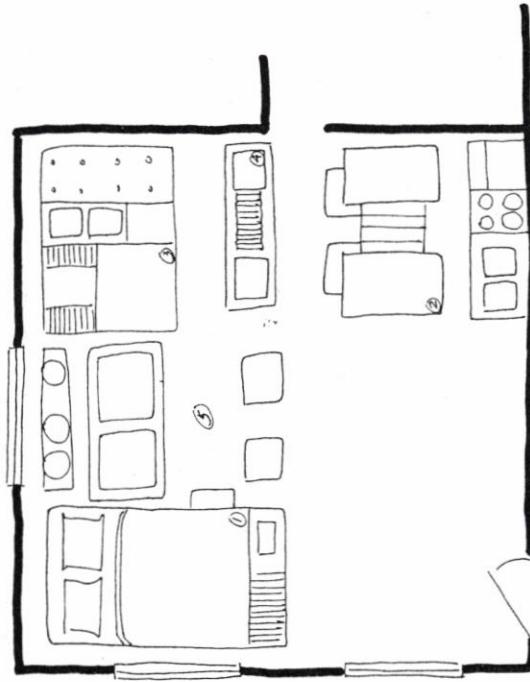
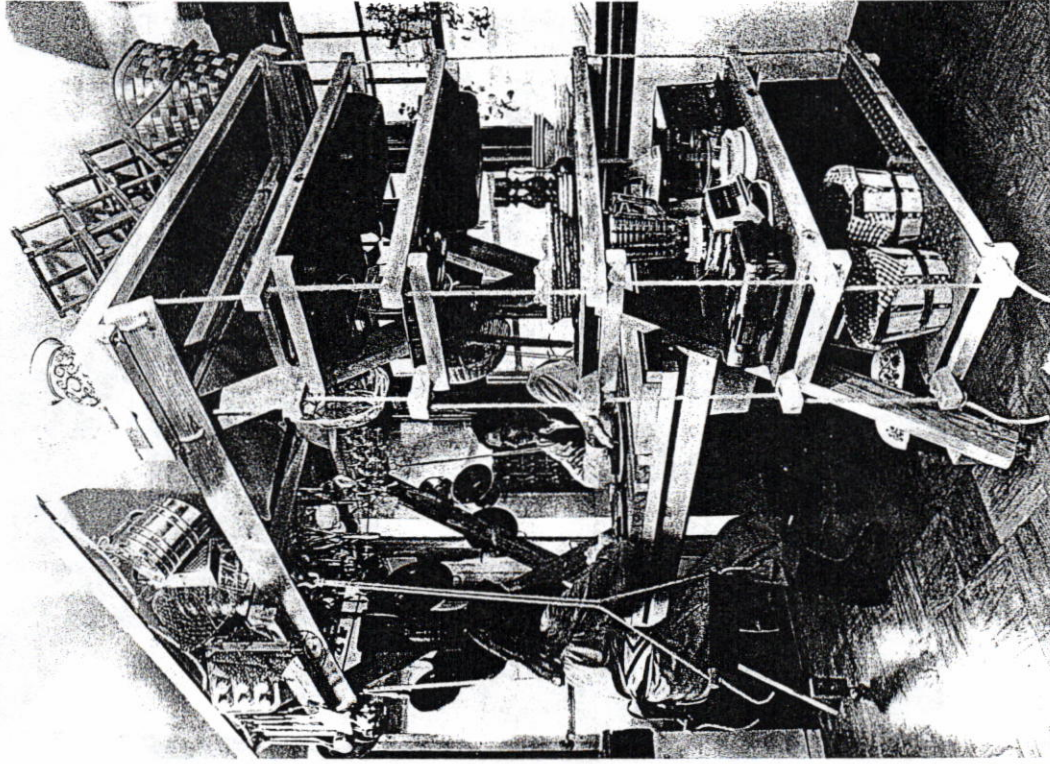
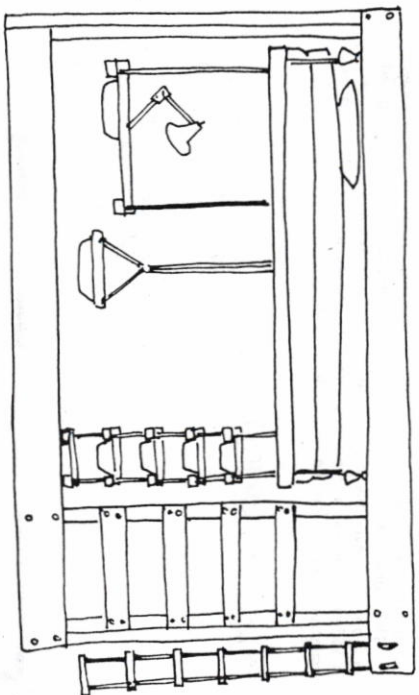


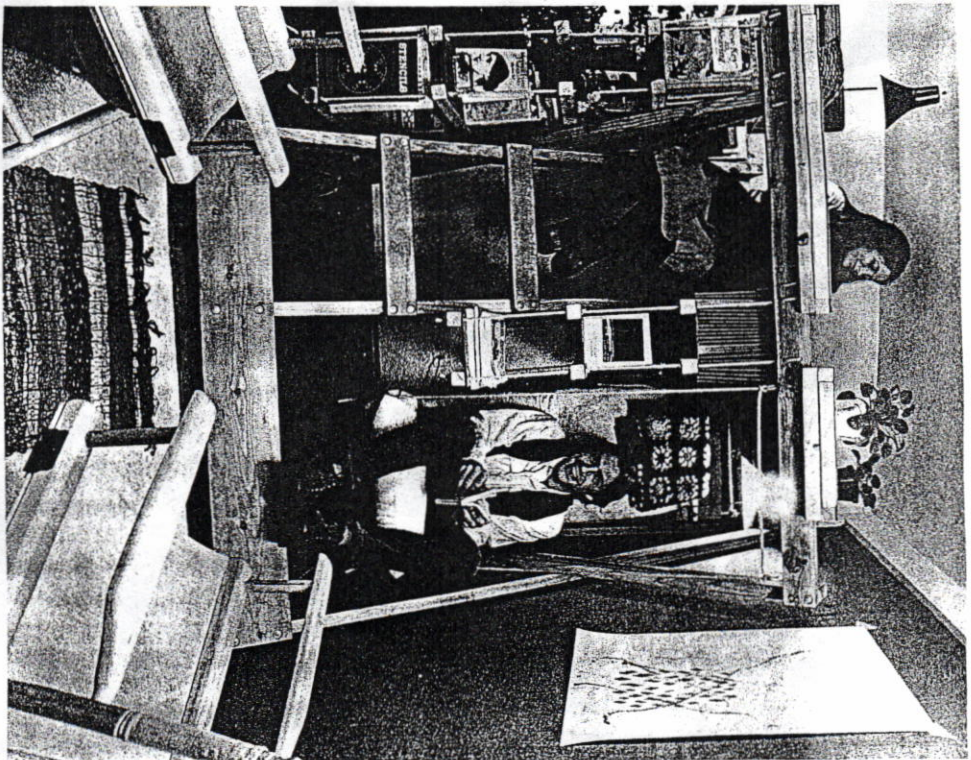
Figure 75

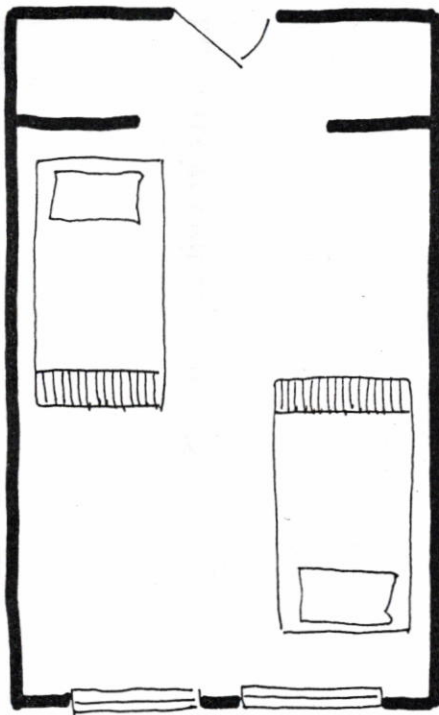




FLOATING BED FOR DORM
WITH DESK ALCOVE, CLOTHING
STORAGE AND BOOKCASE

Figure 74



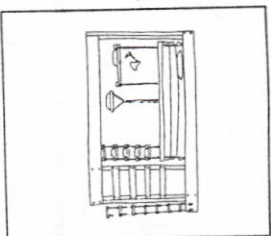


DORM LAYOUT

Figure 73

Part 1 The Components

Layouts in Limited Spaces



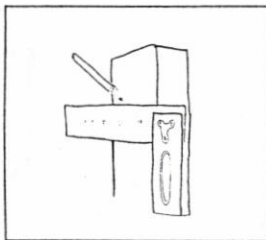
The sample layouts in this chapter were chosen because they are typical—and, at the same time, difficult to breathe life into. Each floor plan makes effective use of vertical space and recycles space that can be used for more than one purpose. The layouts are particularly attentive to liberating open space and minimizing wasted space.

Dormitory Rooms

The typical dorm space (figure 73) must meet the social, study, and sleeping needs (which sometimes overlap) of two students. There isn't much room for privacy, but with people nests some cooperative autonomy can be achieved. This is possible only in educational institutions that do not bolt their furniture to the floor.

Bookcases suspended from open-ended floating beds divide one individual's space from the other's. The liberated space beneath the bed is used for shelves, desk, and clothing storage (figure 74). Open spaces can be used in common for entertaining or other activities that require freedom of movement. For an overnight guest, a hammock can be suspended between systems.

Tools, Materials, and Techniques

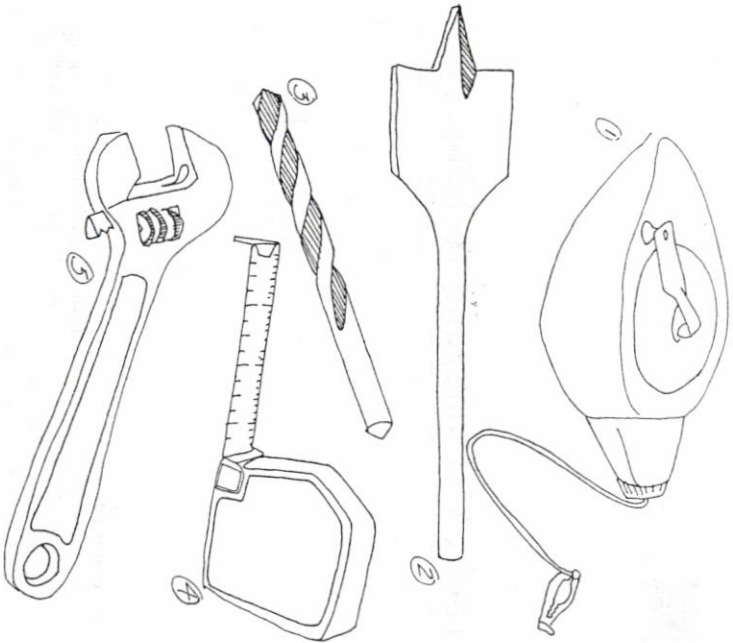


Using Your Hands

This chapter may sound forboding to anyone who decided long ago that he is not "handy," or to any woman who believes that only men can use tools. Bear with me and hear my confession. Although I built the normal number of childhood rafts, go-carts, and tree forts—and played avidly with building blocks, log cabins, and Tinker Toys—I was nonetheless considered mechanically uninclined, and was supposed to have no "aptitude" for working with my hands. Perhaps the all-thumbs image gained momentary justification when my imagination was not spark-plugged by the rituals of teen auto tinkering. Not until I was out of school did my hands begin to regain their confidence.

In recent years, I've chosen to ignore that misfitting and habit-forming self-image, although I've had my share of self-doubt. The change was not difficult; I'm sad to see so many people dragging themselves around dressed in negative identities for fear of dressing themselves down completely.

The greatest problem in presenting the idea of creating your own living space is to convince people garbed in self-bungling images of incompetence that these images are entirely arbitrary. I'd be able to empathize if they explained that woodworking just doesn't do anything for them—but instead the usual refrain is something like: "Sigh—I would love to be able to use my hands."



- ① CHALK LINE
- ② SPADE-TYPE DRILL BIT
- ③ TWIST DRILL BIT
- ④ TAPE MEASURE
- ⑤ ADJUSTABLE WRENCH

Figure 1

Lighting Simplified

Lamp stores are usually an eye-grating kaleidoscope of fixtures. They pretentiously celebrate the lamp—not light itself. We opt for what will almost seem a stark alternative: what is generically known as a photo or studio lamp. These are designed with a ball joint and a clamp so they can be twisted into almost any direction and can be clamped anywhere—along upper ties, halfway down an X-brace, or at footlight level on the lower ties. Surfaces are thereby freed of space-eating table lamps. The shades can be spray-enamelled any color you like.

Photo or studio lamps can be used directly for reading or working, or bounced against a wall for a soft, muted atmosphere. When fixed beneath the pegboard insert of a craft kitchen mini-attic, they keep the light source in front of you, preventing your shadow from getting in the way. Camera shops and hardware and department stores sell these lamps. They range in price from three to seven dollars for those with cool-grip wooden handles.

Track lighting and vertically adjustable hanging lamps integrate nicely with people nests; however, they are not usually worth the cost. The single exception we've made in avoiding commercial lighting is the Luxo™ desk lamp. Elbow-style lamps are good for elevated working surfaces like the desk loft.

FRAMELESS SEATING ARRANGEMENT

- ① CONVERTIBLE SOFA
- ② SIT-UP SEAT
- ③ SUPPLEMENTARY SEATING
- ④ FLOATING BED
- ⑤ DESK LOFT

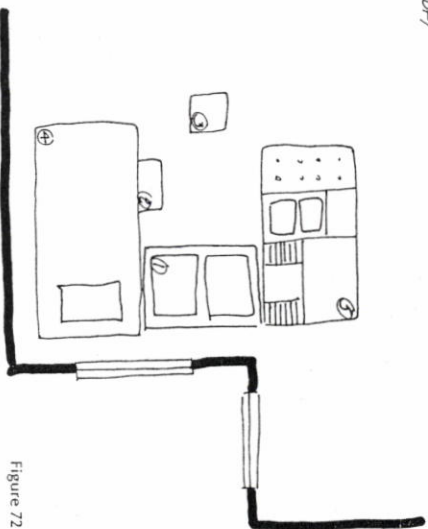


Figure 72

Craftkitchen Wagon as Stepping Stone

The craftkitchen is used most efficiently as a food preparation area. It can be wheeled into a position parallel with the sink, stove, and refrigerator (figure 71), thereby adding more working surface area, organizing utensils and cookware in a central location, and possibly saving preparation time by saving steps. In this position, it's also easy to serve breakfasts and lunches to kids.

Frameless Seating Arrangements

If you don't have enough interior space for a conversation web, arrange systems so you can "borrow" supportive limbs for convertible sofas, hammocks, strap seats, and lounges (figure 72). For instance, a floating lounge could be cantilevered from the open end of a floating bed, or a bed and desk loft be juxtaposed in a way that provides support for a hammock or a convertible sofa. Strap seats can be hung from the upper ties of desk lofts and floating beds, as well as at their normal stations. Floor cushions or director's chairs can be used to complete the ensemble.

After company leaves, the sofa and strap seats can be stored away, thereby recycling floor space for other activities and just plain living. We prefer the slight inconvenience of setting up and breaking camp to the conventions of creased-pants entertaining.

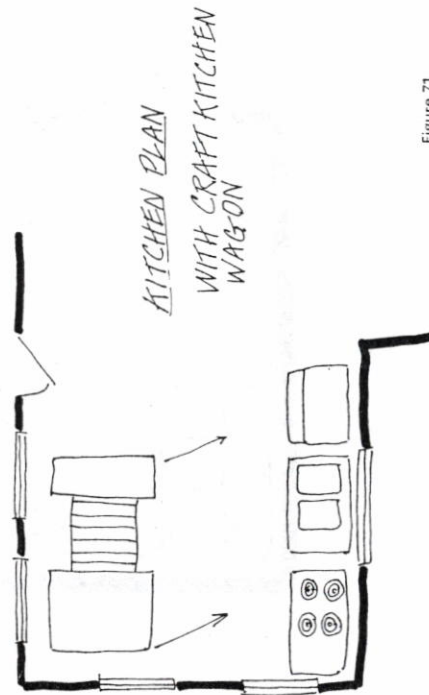


Figure 71

Tools You Will Need

Good tools are dependable. The simpler ones (figure 1) have a quiet beauty. Not only do they make the job possible, but the right ones make it much easier. When used correctly they become extensions of your muscles and mind. If, on the other hand, tools are used casually, as implements to get the job over with, they can be violently uncooperative. Well-cared-for tools contribute pleasure to the process.

The following tools represent an investment of anywhere from a shoestring \$60 to as much as you want to spend. You may already own most of them. They're worth the money—and they will pay for themselves after you've built the first couple of systems.

- *Electric drill, assorted twist drill, and spade-type bits.* A drill and bits are necessities. I recommend a variable-speed $\frac{3}{8}$ -inch electric hand drill—a drill that fits into a portable press would be ideal, but it is not necessary. There are probably more perfectly good drills sitting idle in local garages and attics than there are nails in your house. Check the classified ads in your local newspaper. Shop tag and garage sales, and remember to buy the bits while you're there.
- *Electrical circular saw (optional).* While it's conceivable to tackle living systems with a well-sharpened hand saw, this might be likened to felling a redwood with a blunt hatchet. A $6\frac{1}{2}$ -inch to $7\frac{1}{4}$ -inch (blade diameter) circular saw is practically indispensable—unless you plan on having your milling done at the lumberyard. Watch for sales and you'll make substantial savings when buying electric tools.
- *Belt sander (optional).* A belt sander is a large investment; it's not necessary if you choose your wood carefully. If you feel you need more than a hand, block-sanded finish, belt sanders can often be rented.
- *Hammer.* Any lightweight household hammer will be fine.
- *Adjustable wrench.* Stanley Tools has recently marketed a nut driver called the "Hex-a-matic" that adjusts to fit many hex nut sizes and is good for tightening heads that have been countersunk. Socket wrenches and attachments for variable-speed drills can also be used to drive nuts. A small, traditional, adjustable wrench, although slower, will also do the job.
- *Scissors.*
- *Sewing machine (optional).* You'll need a machine only when making seats, sofas, and lounges. This work, because it's not extensive, can also be done by hand.
- *Chalk line (optional).* A chalk line looks something like a fishing reel and is used for marking lines.
- *Eight-inch square with wooden handle.*
- *Soft-leaded pencil.*
- *Level (optional).*
- *Screwdriver.*
- *Safety glasses.* Don't use an electric saw without them.
- *Twelve-foot tape measure.*

Buying Materials

My friend and landlady, Kitty, is an expert on supermarket shopping. She knows where and when to go and how much to pay. In the same spirit, I have made a survey of all the hardware stores and lumberyards in my area. Whenever you live, look for the big suppliers who deal primarily with professionals. Their prices will be the leanest and their advice the most helpful. Avoid both the large all-in-one discount stores and the blister-packed home improvement centers. Long-established neighborhood hardware stores are pleasant to do business with and often reasonably competitive. Compare prices ahead of time by phone. The other day we priced a box of 100 hex nuts at a number of stores; the prices ranged from 4.7 cents to 1.5 cents per nut. Washers ran between 95 cents per pound, or one-half cent each, and \$3.80 per pound, or two cents each.

Wood

Douglas fir is a versatile, unusually strong, easy-to-work-with softwood that finishes well. If you live in a wooden house, it was probably built of fir. Lumberyards have it in several grades. Numbers one and two construction grades are suitable for our purposes.

There is a variety of other wood types that are also easy to work with. Hemlock and yellow pine are acceptable substitutes for Douglas fir; they have a much sweeter scent and are often less expensive. Some strength is sacrificed, but in the following designs this is not crucial. Storage systems would ideally be built of moth-repellent cedar, but cedar is expensive and is not always available in suitable dimensions. Shelving is usually made of white pine or of such wood products as plywood, hardboard, and other fiber-composition boards.

The format of most lumberyards is similar. Your order is taken at a front desk and you're given two receipts, one for you and one for the yardman. You are then directed to the yard, shed, or barn where the wood is stored. Wood that has been left outside is usually not desirable. Be forward and help the yardman pull your purchase from the stacks. In a polite way (or even, if necessary, impolitely) reject pieces that are split, bowed, warped, or severely knotted (figure 2). Tight knots are all right, but loose ones, especially in the smaller stocks can cause problems.

When you get everything home, don't be dismayed by the fact that the two-by-fours do not actually measure two inches by four inches—they never do (figure 3). Nominal dimensions of lumber are for first-cut rough dimensions, so they are always greater than actual measurements. All specifications given below are in nominal terms. In this instance, it's easier to play along with insanity rather than fight it.

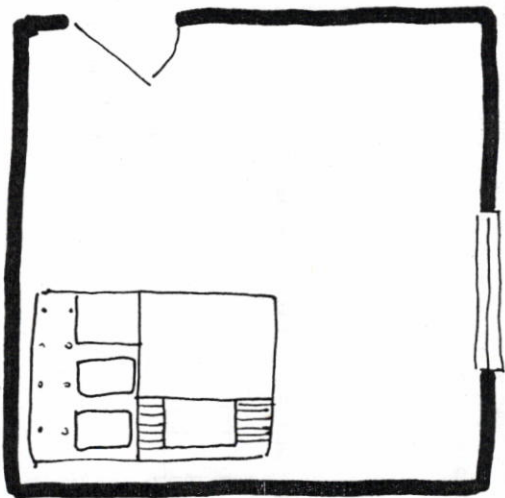
When buying lumber for these systems and components, it is also important to know that wood comes in standard lengths, usually eight-footers, tens, twelves, fourteens, and sixteens. This means that when a particular set of specifications calls for "4 pcs. 2" x 6" x 9'" Douglas fir, you will have to round-up to the closest length and buy four ten-footers of two-by-six. If the specs call for "2 pcs. 2" x 4" x 35'", buy a single eight-foot piece of two-by-four. Before you walk into the lumber yard, make a copy of the shopping list provided for the system you're building.

immediate surroundings without being unnecessarily alienated from the room.

Sitting with the crown of your head nearly kissing the ceiling presents you with a totally new perspective of even the most familiar of rooms. Instead of feeling that a room is about to come tumbling down, integrated space gives you a meditative lift—as if the furniture were carrying you on its shoulders above the chaos.

Figure 70-1 depicts a typical study/library ensemble. Note that most of the open space in this arrangement is scattered and often in conflict with the entrance, with paths of circulation, with access to shelves, and with the desk seat, which pulls into the room's center. These conflicts devalue space, limiting its availability.

The desk loft depicted in figure 70-2 acts to consolidate study functions, thereby enhancing the value of the room's free space. Such open places of mediation have not been dissected into dead little corners, but instead retain their vitality. The house maintains its health by preventing one organ from fighting another.



LIBERATED STUDY
WITH DESK LOFT

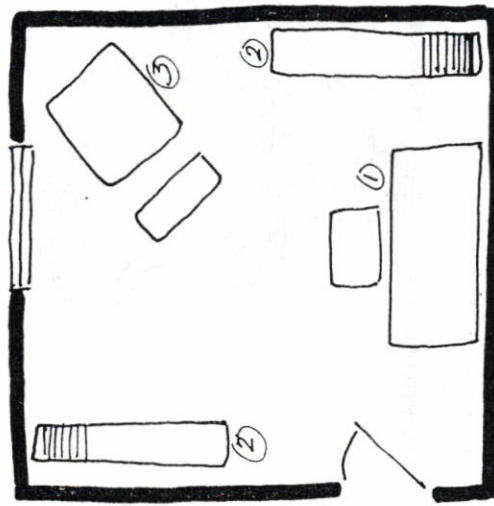
Figure 70-2

Liberating Space with Desk Lofts

Do you ever get the feeling that a room has become petrified—that it will never change and will always be another rock around your neck? Or, even worse, that a room is your enemy, impossible to clean or walk through without knocking your shin? Sometimes rooms turn against their creators—it's like living with a second personality that is incompatible with your own.

My worst spatial phobias usually stem from feeling cramped, and dens and studios are usually the greatest offenders. The desk loft remedies this (figure 70) by consolidating many furniture objects into a single system. Small rooms become adequate with the addition of the desk loft, and large rooms, gracious and airy.

Most conventional desks, like dead-end caves, face blankly into the wall. This arrangement stems from our need to shut out distractions—but concentration is not necessarily synonymous with isolation. We seem to feel that inspiration is nurtured in studies that resemble monks' cells. By raising the surface of a desk and facing it into a room or out an open window, we have satisfied the requirement of removing ourselves from the hubbub of



CONVENTIONAL STUDY

- ① DESK AND SEAT
- ② BOOK CASE
- ③ LOUNGE CHAIR

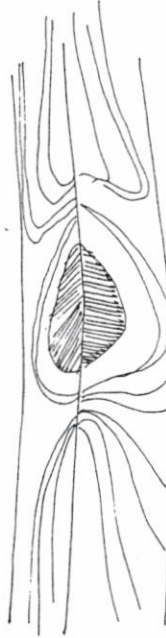
Figure 70-1



SPLIT AND WARPED BOARD

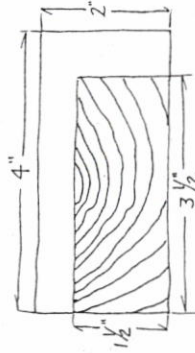


BOWED 2"x4"



KNOT DEFECTIVE 2"x2"

Figure 2



NOMINAL VERSUS ACTUAL DIMENSIONS

Figure 3

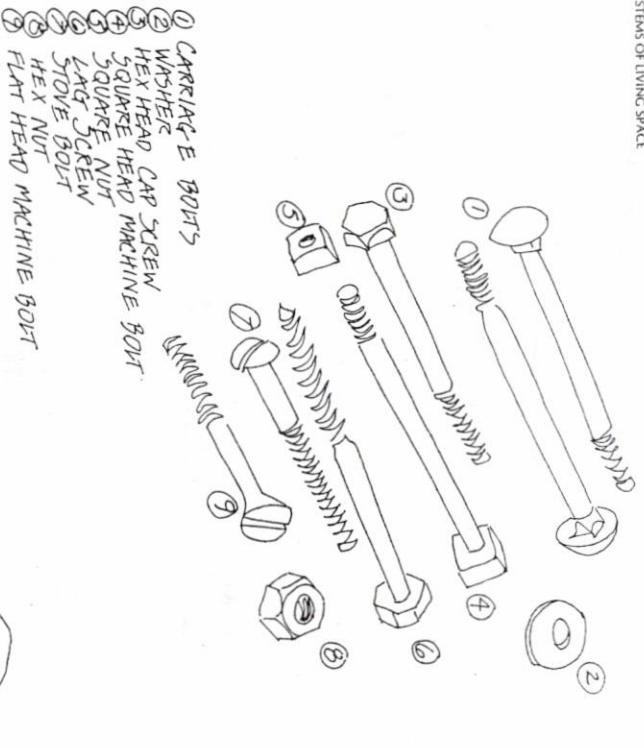


Figure 4

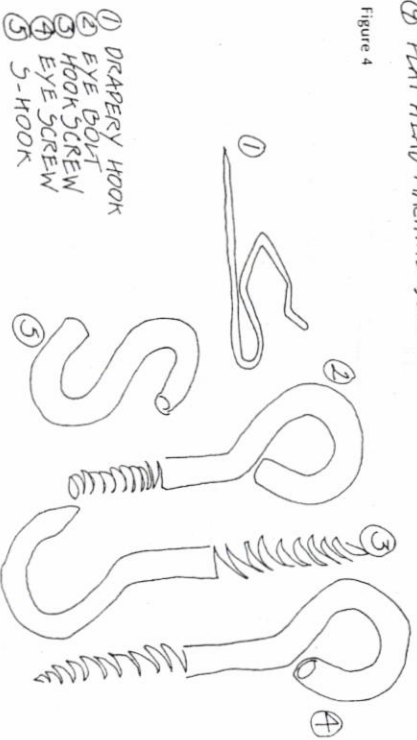
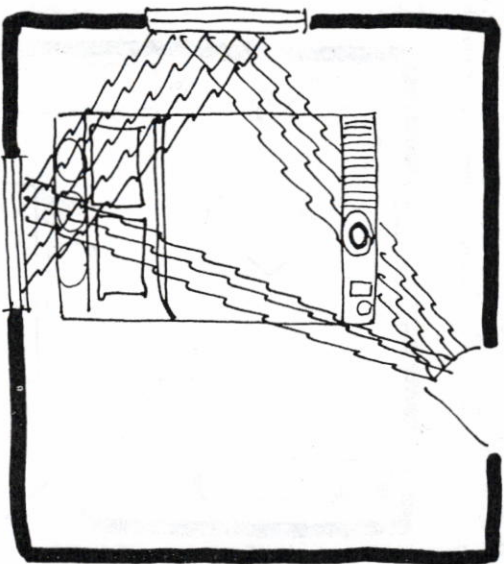


Figure 5

Floating Bed Sites

When choosing a site for your floating bed, keep in mind the law that heat rises: the upper half of a room is normally warmer than the lower. This is to your economical and ecological advantage during the winter and will allow you to lower the setting on your thermostat. When planning a summer site, window locations and cross-ventilation (figure 69) must be taken into consideration—unless, of course, you have air conditioning.

The open end of a floating bed, buried up against a window, might be used to hang racks of plants, thereby creating a foliage screen that translates inside into outside very effectively. A small, strategically placed fan will also help keep you floating during the hot summer months.

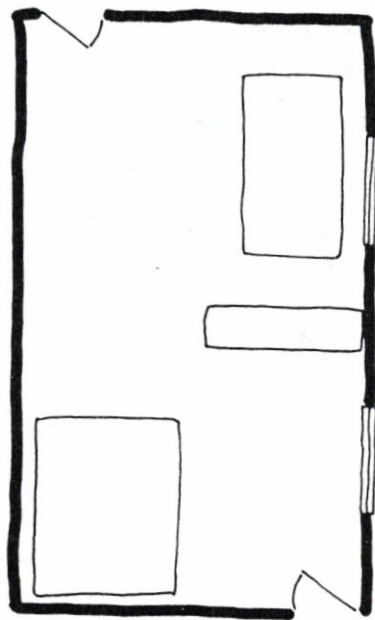


BED SITE

Figure 69

(and translate) bed space from study space. Although two such spaces are different and require a certain amount of reciprocal privacy, they also have a lot in common. The book membrane underscores that continuity—especially for those of us whose favorite place to read or think is in bed.

A second example of spatial interaction is between a conversation web and a craftkitchen, separated by a wall system devoted to stereo, radio, clock, TV, and display functions for handmade pottery, sculpture, pampered plants, or other craft products. Such a media membrane looks in two directions. It conducts rather than obstructs, allowing air, window light, talk, talents, and even good smells from the kitchen to commune with the adjacent entertainment space.



WALL SYSTEM AS
MEMBRANE

Figure 68

Nuts and Bolts

Nuts and bolts are called by all sorts of names (figure 4). These systems call for hex-headed cap screws, carriage bolts, or machine bolts (and stove bolts, in special instances). Framing specifications list cap screws, but carriage or machine bolts can be substituted. Carriage bolts have square collars that keep them from turning in their settings and give a finished appearance. Machine bolts are either square or flat-headed; although less expensive, they are more prone to oxidation and failure.

In the specification lists you'll also run across short, bluntly computer-like phrases—30 pcs. $\frac{1}{4}$ (20) x 4 cap screws, or 42 pcs. $\frac{1}{4}$ washers, or 2 pcs. $\frac{3}{8}$ (16) hex nuts. Don't worry, it makes sense once you've deciphered the code. The fraction refers to the bolt shaft diameter, and the figure that follows in parentheses is the number of bolt threads per inch. The last dimension given is the length of the bolt, from just under its head to its tip. The washer dimension indicates what diameter bolt shaft it is made to accommodate. Nuts are also labeled according to diameter of hole and number of threads per inch.

Bolts, nuts, and washers are usually plated with zinc or cadmium with a chromate seal to protect your hardware from oxidation. Flat-black-coated steel (if available) provides a contrasting alternative to the bright-plated bolts. Items are usually sold individually, but they are cheaper by the lot or by the pound.

Miscellaneous Hardware

Screws with eyes, screws with hooks, bolts with eyes, lag screws, pulleys, hammock hooks, drapery hooks, S-hooks, and casters are unfortunately not so systematic in their appellations. However, their intriguing simplicity (figure 5) and manifold applications make them worth the trouble of finding them. Dob falls in love with odd pieces of hardware—especially marine hardware (figure 6)—and we usually end up incorporating them into our systems. Spec lists elaborate on the descriptions of miscellaneous hardware.



MARINE HARDWARE



Figure 6

Rope

Most of these systems call for either $\frac{1}{4}$ -inch- or $\frac{1}{2}$ -inch-diameter manila rope. Nylon rope, although more expensive, is stronger than manila and can be used as a substitute. Rope is normally sold by the foot but is sometimes prepackaged. Prices vary drastically, up to 80 percent, so shop around. A wide margin of safety has been added to all specifications.

Basic Techniques

The following techniques are learned by doing. It saves on some of the redoing if you stop and think out even the most obvious operations before getting started.

Measuring and Marking

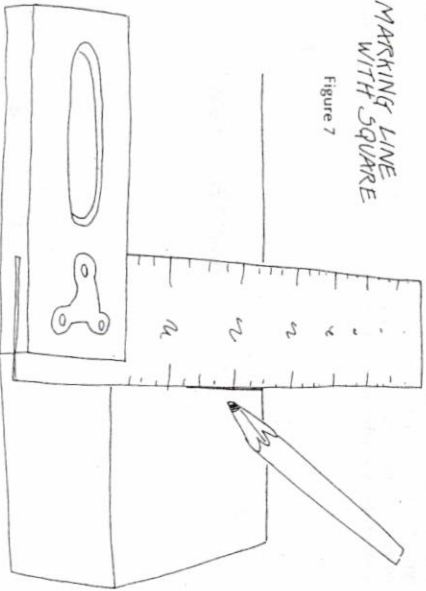
The act of taking a measurement, while simple, is often the cause of unnecessary waste of time and material. An old Italian proverb says, "Measure twice; cut once." Mark measured lengths with a flick of a soft-headed pencil. Mark points to be drilled with an X.

Drawing Lines

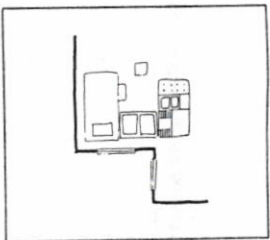
Using a square with the inside edge of the handle flush to the board's edge (figure 7), draw your perpendicular cutting lines and lay out the location of your joints first. To continue lines that are longer than the square, use a straightedge (the edge of a level or of a large framing square is good) or a chalk line. A chalk line is usually a reel of red or blue chalk-dusted string with a small hook at one end. By hooking the string to an edge and pulling it taut between two marked points, and then snapping it against the surface, a perfectly straight line can be obtained.

MARKING LINE
WITH SQUARE

Figure 7



11

Spatial Anatomy**Relationships**

The anatomy of a super-system is composed of both system-to-system and system-to-shell relationships. Shells consist of such items as walls, floors, ceilings, windows, doors, partitions, closets, and electrical outlets. Most of us have only conventional shells to work with, but whether you're trying to make yourself at home in a ten-room house, a circus tent, or the back of a Chevy van, a number of spatial principles should be considered.

The situations chosen for this chapter exemplify solutions to the most typical space problems. They are meant only as a basic guide. In the end, the living space that crystallizes around you has to be somewhat different from the facets around me.

Wall Systems as Membranes

The floor plan in figure 68 makes use of a wall system to differentiate what would otherwise be a psychically amorphous rectangle of hard, cold, empty space. By using the wall system as a divider membrane, you are permitted access to either side. Since the wall system is permeable and does not absolutely and opaquely slice the living space in two, the newly created spaces maintain an organic relationship with one another. In contrast to a conventional stud-and-plasterboard partition, a portable wall system can be removed without resorting to wrecking bars and sledgehammers.

Aside from differentiating space, a membrane can provide a transition from one system to another. For instance, a swing set bookshelf can divide

Sanding

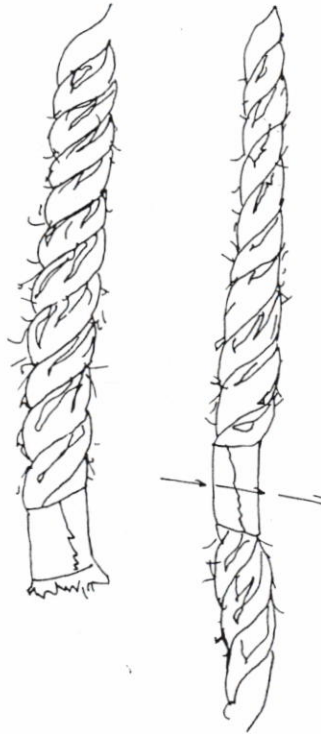
An electric belt sander works well on cleaning up dirty wood or smoothing rough areas. Orbital sanders are next to useless except for fine finishing work. As mentioned before, if you choose your pieces of wood carefully, rejecting splintered, unevenly weathered, dirty, and rough-surfaced pieces, it's possible to do all your sanding by hand.

Wrap a medium to coarse piece of sandpaper around a small block of wood and use it to round splintered ends, rough saw cuts, and drillings. Let the wood retain some of its grainy character—but be sure to sand all surfaces until they are at least splinter-free.

Finishing

The indiscriminate craze for stained wood is, I think, beginning to bore enough people to allow me to present an alternative here. Simply leave your wood its natural color. Rub everything down with linseed oil before assembling and go over it lightly once every six months thereafter. Common wood tones range from bone white to light and dry tans to warm honey-blond to cedar red. It's interesting to combine various wood types in the same nest for integrated ornamental effects, similar to those achieved by Victorian architects with varicolored stone and brick.

We have made two exceptions to this procedure. Both eating surfaces and ladder rungs are easier to clean if you protect them with a few coats of varnish (Do not oil if you are intending to varnish!).



CUTTING ROPE AT TAPE
TO PREVENT UNRAVELING

Figure 9-1

Part 3

Super-Systems

Sawing

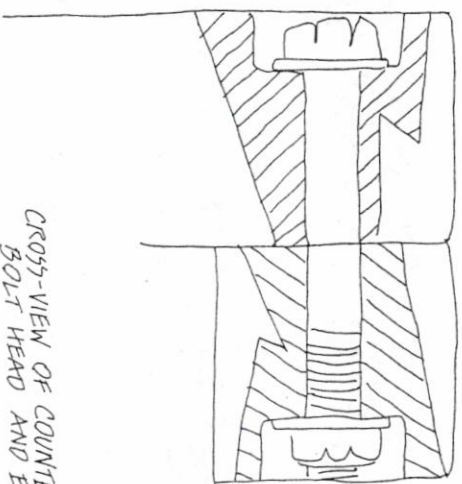
Wearing safety glasses, align the saw guide and cut to the waste side of your line. Do not cut right on the cutting line or your lengths will be shy by about $\frac{1}{8}$ inch of your original measures. Read the operating manual and safety instructions for your saw carefully. Familiarize yourself with the saw on scrap wood.

If you would prefer not to get involved with this aspect of nest building, most lumber yards with milling facilities will give you fast service at reasonable cost.

Drilling and Countersinking

It's not easy to drill a perfectly vertical hole without a drill press; however, for our purposes, careful hand drilling is adequate. A square-positioned grip-down acts as a good vertical reference when drilling, and the lugs described below also get the job done.

Holes are countersunk (figure 8) to eliminate dangerously protruding bolt head and ends in exposed areas. Use spade-type bits to bore wells that sink cap screw heads and hex nuts approximately $\frac{1}{8}$ inch below the surface. Carriage bolt heads do not require countersinking.



CROSS-VIEW OF COUNTERSUNK
BOLT HEAD AND END

Figure 8

Peg sockets are drilled with spade bits, and dowel segments are then hammered into place. A V-configuration utilizes hanging space most efficiently.

The sunscreening skid is constructed with a two-by-two skid spanned by fir strips at two inch intervals. The two-by-ten fir floorboards are spaced at 3/4-inch intervals and are bolted or nailed to a skid with either 1/4(20) x 3 1/2 carriage bolts or 10d-size common nails.

Use deck paint or floor varnish on the floor boards, and, if the web will be used outdoors, a clear, penetrating wood preservative to ward off insects and decay. Protective outdoor stains can also be used, but the frame will weather to a barn-board gray soon enough.



Figure 9-2

Rope Cutting

A simple procedure used in most hardware stores can come in handy. Wrap the spot to be cut with a few inches of masking tape and cut at the tape's center (figure 9-1). This prevents the ends from unraveling while you're working. Later the ends can be refinished permanently by winding them with carpet thread or string (figure 9-2).

Leveling

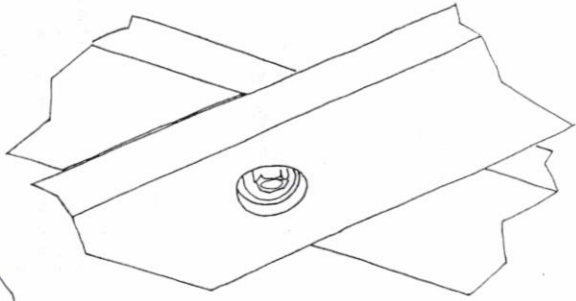
A level is used to check the trueness of either vertical or horizontal surfaces. Surfaces are true if the fluid-captured bubble localizes itself between the markings on the tube. This is especially useful when hanging shelves.

Joining

In all of the following projects, only two elementary types of joints are used. The scissor joint (figure 10) consists of two lengths of wood joined face to face by a single bolt and nut. If using cap screws, use two washers for each screw—one under the head and the other under the nut. If using carriage bolts, one washer under the nut will suffice. Washers are used with bolted wooden joints for a "snowshoe" effect, keeping the heads or nuts from digging into the wood's surface.

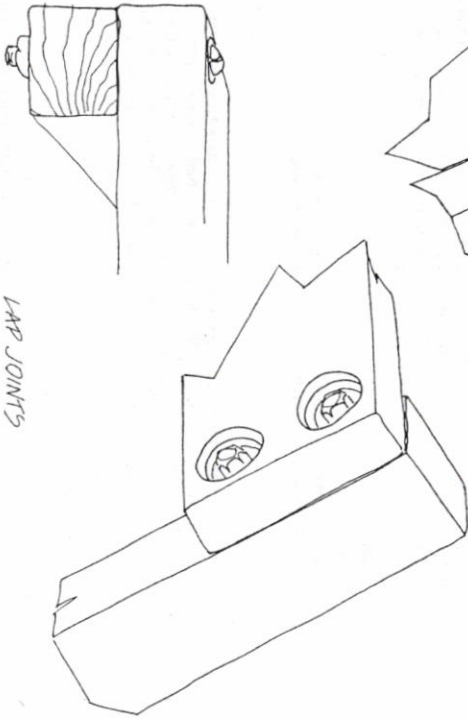
The lap joint (figure 11) consists of the face of one board overlapping the edge of a second and joined by one or two bolts. Space joint bolts to please your eye—see figure 12 for suggested intervals.

When bolts are not long enough to extend through both joint members (for example, joining the edge of a two-by-six to the face of a two-by-four), a 1 1/2-inch hole can be drilled with a spade bit from one face to the other. The bolt is fastened inside the hole (figure 13). Lag screws can also be used in this situation, although they do not provide as strong a joint.



SCISSOR JOINT

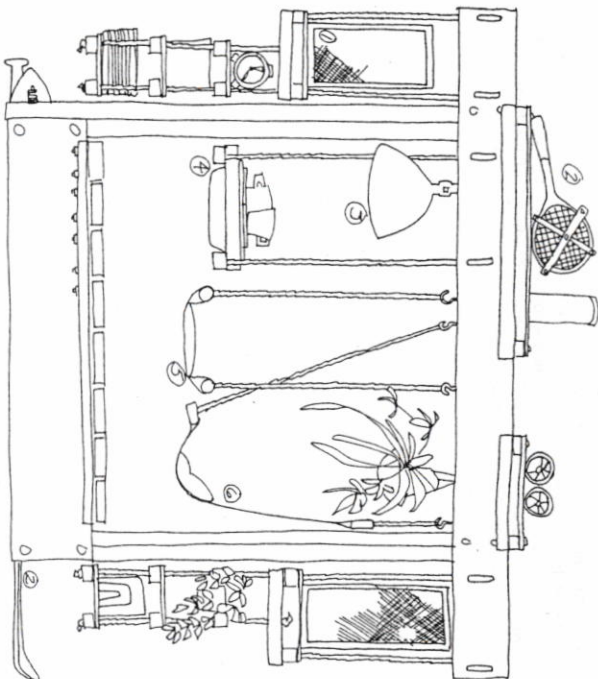
Figure 10



LAP JOINTS

Figure 11

INDOOR WEB



1. SOUND SYSTEM
2. STORAGE: RECREATIONAL EQUIPMENT
3. PHOTO LAMP
4. ANIMATED SURFACE
5. STRAP SEAT
6. JOKA

Figure 67

fellows, absorbing telepathy and piteously replacing it with the lulling drone of television.

The parlor or living room should not be divorced from the intimacies of the dweller's life-activities. The furniture should allow people to confront one another, first with their bodies and then with the gestures of their souls. Comfort of the body should be a concern, but not an obsession.

Our definition of comfort has almost become a negation of the senses—sense-less comfort is when you're not aware of your body, when it has sunk from your control. We have almost forgotten that the body is even more profoundly expressive than is oral language in face-to-face communication. When it is freed from conventional furniture molds, the body seeks rapport and does not retreat into a defensive attitude. Nests encourage the body and the self to reach out and probe possible new relationships.

"Manifest as a bird's nest . . ."

The conversation web (figure 67) is a work that seems to remain in perpetual progress, changing from a deck-patio to an indoor social center to a tool and cycle shed. Its primary function is to provide a frame to hang mobile seating. The open ends or wings can support extra-deep shelves for stereo speakers, racks for house plants, shelving for oversized books and clamp-on room lamps. Mini-attics and mini-basements for extra storage can be formed by building skids on upper and lower ties and inserting hard-board above and two-by-ten fir floor planks below. These compartments are good for things like travel bags, camping equipment, skis, surfboards, and other sports equipment that may be intrusively out of season.

The conversation web we are currently living with is outdoors on a concrete patio—although footings for it can be improvised with four sunken concrete blocks at the feet of the X-braces. It is nearly as big as a jungle gym (eight feet tall, twelve feet long, and seven feet wide), and is the most monumental of the X-frames we've built so far. The upper ties are equipped with hookups for our Mayan hammock, a convertible sofa, strap seats, lounges, pots of summer flowers, and an animated surface for serving buffet. Commercially available, hanging "basket" seats, woven of wicker and suspended by a chain, make interesting additions to conversation webs. If you're not in the mood for a sunbath in the hammock, a movable sunscreening skid on the upper ties breaks up the rays into zebra-striped shade.

Pegs and a plastic tarp or groundcloth keep our bicycles off the ground and dry during noncycling months. More pegs and another tarp shelter our collection of garden tools and our barbecue grill. I have visions of the conversation web some day growing into a mini-living structure, complete with lofts, a raised floor, a retractable nylon roof, mosquito netting, and wall panels.

Notes on Construction

The web can be made of almost any size X-frame. You'll need a lot of open space to erect the super-sized version mentioned above. A good standard-sized model for interior or exterior use can be made by following the specifications given for the floating bed X-frame, deleting the ladder and adding open ends if desired.

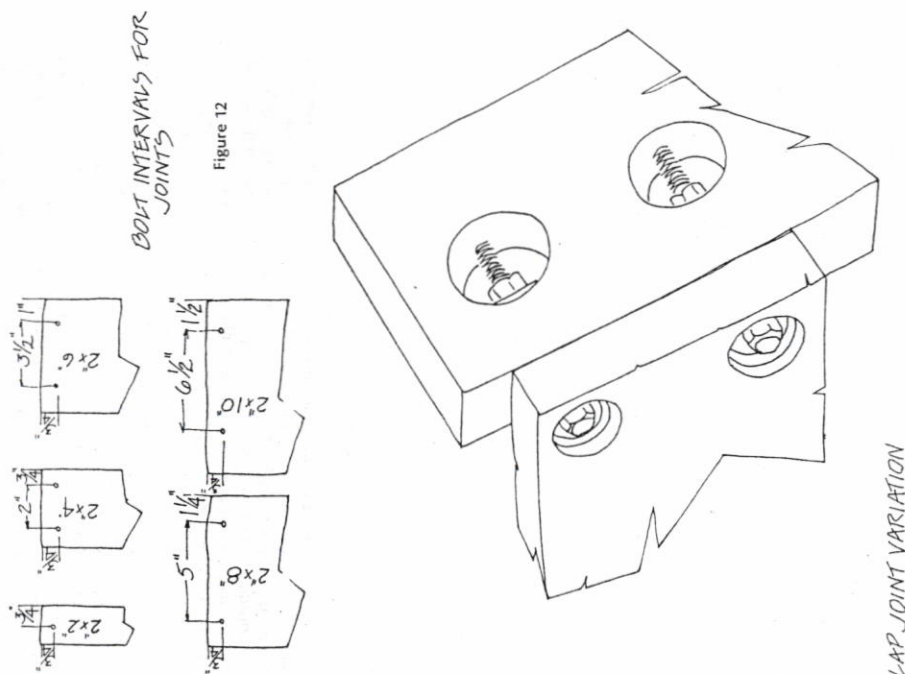


Figure 12

Figure 13

Hanging Components

Rope is used to suspend components from the upper ties of X-frames in all nest designs. This can be done with or without hardware. The hardware methods (figure 14) utilize eye screws and S-hooks, eye bolts and S-hooks, or just hook screws. Drill pilot holes for eye screws and hook screws with a bit of slightly smaller diameter than the screw. Attach rope to hooks with tension loops, shown in figure 15. These methods are good for components like seats or hammocks that have to be detached frequently to recycle the space for other purposes. If using hook screws or eye screws with seating, be sure the shank diameter is at least 3/16-inch. The no-hardware method (figure 16), which I prefer in most situations, makes use of a pair of drilled holes and an overhand knot to attach rigging to the tie member.

My original method for joining rope to suspended components was to use hardware, or else to thread the rope through a hole and tie a knot. This proved unsatisfactory when hanging a series of components, like shelves, because the cost of hardware adds up and overhand knots in tension are difficult to loosen and readjust. One afternoon, while draining my head in a hot shower, a better way to hang a series of shelves or racks came to me. Hardware and knots are eliminated except on the terminal member of the series. In their place we rely on "tension holes." With this method it's a simple matter to make shelf readjustments without undoing the entire rigging.

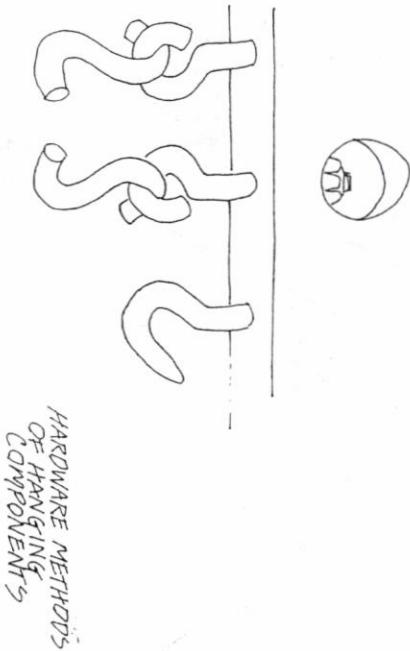
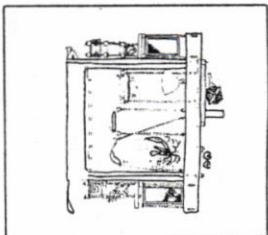


Figure 14

10

Conversation Webs



Friends and Visitors

One of the purest American statements on spatial hospitality was made in 1854 by Henry David Thoreau. He dreams of a house "whose inside is as open and manifest as a bird's nest . . . where to be a guest is to be presented with the freedom of the house, and not to be carefully excluded from seven-eighths of it, shut up in a particular cell, and told to make yourself at home there—in solitary confinement."

He goes on to admonish: "Nowadays the host does not admit you to his hearth, but has got the mason to build one for yourself somewhere in his alley, and hospitality is the art of keeping you at the greatest distance. There is as much secrecy about the cooking as if he had a design to poison you."

More than a century later, the average American living room is still used to disguise the intimate aspects of a home's life. It is a showcase, usually carpeted and trinketed from wall to wall—good only for watching football games, killing conversations, and falling asleep in big armchairs.

During my years as a quiet but big-eared child, I noticed that when the relatives gathered on holidays, the best conversations (and arguments) were always at the dinner table—where people confronted one another with their appetites and their offerings of food. The living room, by contrast, was an abyss of foam cushions and polished silver that choked you off from your

One full sheet $\frac{1}{4}$ " pegboard (4' x 8') for both shelves and mini-attic
 50' $\frac{1}{4}$ " manila rope
 Materials for animated surface plane inserts and organizers
 Materials for strap seats or stool substitutes
 Drapery hooks
 Hook screws
 S-hooks
 Rawhide lacing

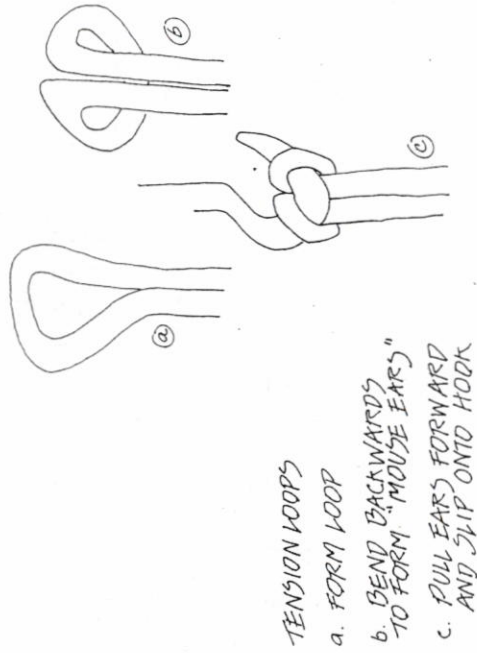
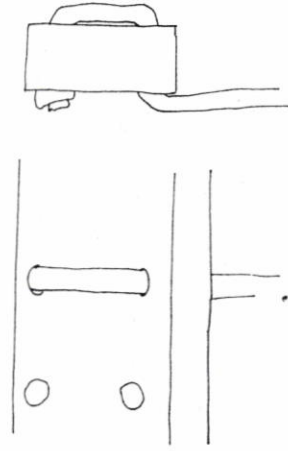
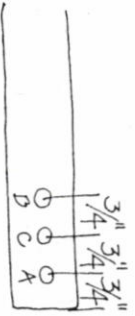


Figure 15

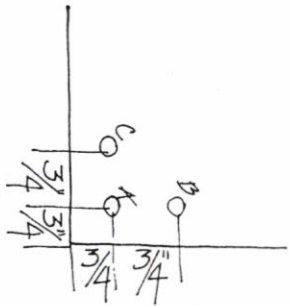


**NO-HARDWARE
 METHOD OF
 HANGING COMPONENTS**

Figure 16

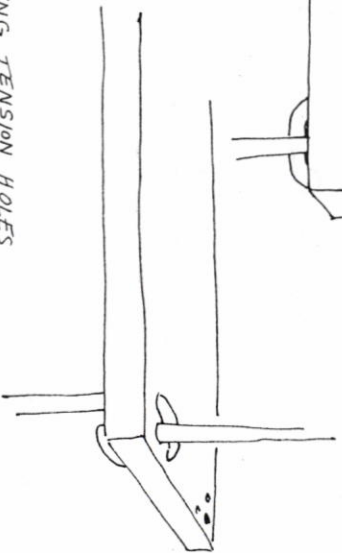
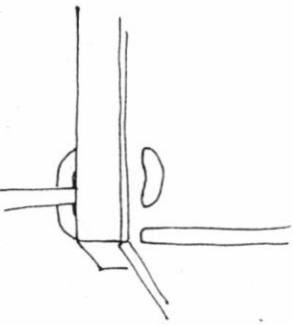


LINEAR TENSION HOLES



TRIANGULAR TENSION HOLES

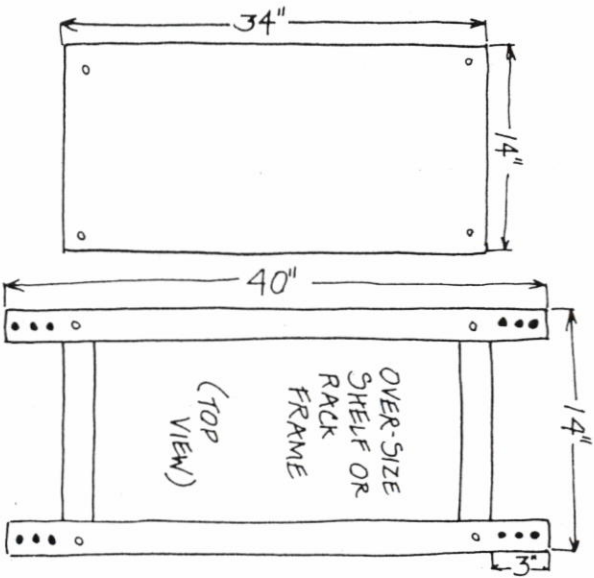
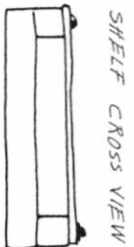
Figure 17-1



LACING TENSION HOLES

Figure 17-2

SHELF PLANS



- 3/16" HOLES
- 3/8" HOLES

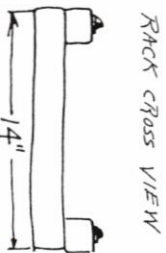


Figure 66

Materials:

- a. 4 pcs. 2" x 2" x 26" for dividers and side pieces.
- b. 2 pcs. 2" x 2" x 54 1/4" for front and back pieces.
- c. 8 pcs. 1/4(20) x 3 cap screws.
- d. 16 pcs. 1/4" washers.
- e. 8 pcs. 1/4(20) hex nuts.
- f. Plane inserts to meet your needs (hardboard, maple, wood-strung eating surface from scrap fir, etc.). For this particular wood-strung surface, two pairs 2" x 6" in end openings and 7 pcs. 2" x 4" plus 1 pc. 2" x 2" in center opening, each 26" long.
- g. Rubbermaid dishpans (12 1/2" x 14 1/2" x 5 1/2") for organizer inserts.

Shelves and Racks

3 shelves, 2 racks (figure 66)

- a. 10 pcs. 2" x 2" x 40" for front and back stiffeners.
- b. 10 pcs. 2" x 2" x 14" side pieces.
- c. 3 pcs. 1/4" x 14" x 34" hardboard (1 substituted pegboard for unholed hardboard).
- d. 20 pcs. 3/16(24) x 3 1/2 stove bolts to construct frames.
- e. 40 pcs. 3/16" washers.
- f. 20 pcs. 3/16(24) hex nuts to hang shelves.
- g. 30 1/2" manila rope.
- h. Organizer inserts for racks (Rubbermaid dishpans and similarly dimensioned silverware organizers, or anything else you may want to adapt to your craftkitchen).

Seating

Use strap seat specifications given in chapter five. Hanging seats work well with the craftkitchen, especially when you're cleaning the floor. There are no legs and the seats can be collapsed and hung in the corner when not in use. Seat heights can be adjusted and the straps slipped apart for easy washing; a minor problem may arise if you want to pass the butter and have to dodge the seat rigging. Conventional counter stools can be successfully combined with craftkitchens.

Shopping List for Craftkitchen Wagon

- 6 pcs. 2" x 4" x 8' Douglas fir
- 11 pcs. 2" x 2" x 10' Douglas fir
- 1 pc. 2" x 6" x 10' Douglas fir
- 18 pcs. 1/4(20) x 3 cap screws
- 18 pcs. 1/4(20) x 5 1/2 cap screws
- 20 pcs. 3/16(24) x 3 1/2 stove bolts
- 8 pcs. 3/16(24) x 2 stove bolts
- 72 pcs. 1/4" washers
- 36 pcs. 1/4(20) hex nuts
- 56 pcs. 3/16" washers
- 28 pcs. 3/16(24) hex nuts

Tension holes are grouped in threes, in either triangular or linear configuration (figure 17-1). Triangles are used with solid pine or plywood shelves. Rows are used with racks and hardboard shelves that have been framed with two-by-twos.

The first component in a rope-suspended series (figure 17-2) is laced by threading down through A, back up through C, and down again through B. The next group of tension holes is laced by threading down through B, up through C, and down once again through A. On the third component in the series the procedure begins all over again. The terminal component is secured by threading the rope through a single hole and tying an overhand knot.

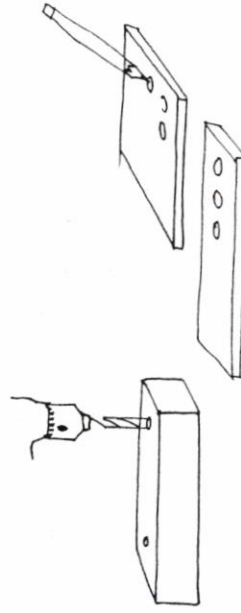
A level is a great help during this step, but standing back and eyeballing will work just as well. Load shelves or racks from the bottom up, thereby tensing the rigging and locking the components into position. After a few days, they may settle into unbalanced positions. Adjust by slackening the tension just below the tension holes and feeding the rope upward, to lower the shelf, or downward, to raise it.

Jigs and Templates

The techniques of the previous two sections involve repetitive drillings for joining wood to wood or wood to rope. Jigs and templates (figure 18) facilitate the drilling of these oft-used configurations.

A jig consists of true and parallel holes properly spaced in a jig block made of two-by-two scrap. It ensures matching bolt holes when making lap joints. Make jigs for joints to match bolt intervals suggested for standard lumber widths (see section on joining). Use your square to make sure guide holes are perpendicular.

Templates make the drilling of tension holes much easier. Instead of remeasuring and remarking at each junction, simply use the predrilled holes in a scrap of hardboard as a guide. Make templates for both triangular and linear configurations.



JIG AND TEMPLATE

Figure 18

The Mini-Attic

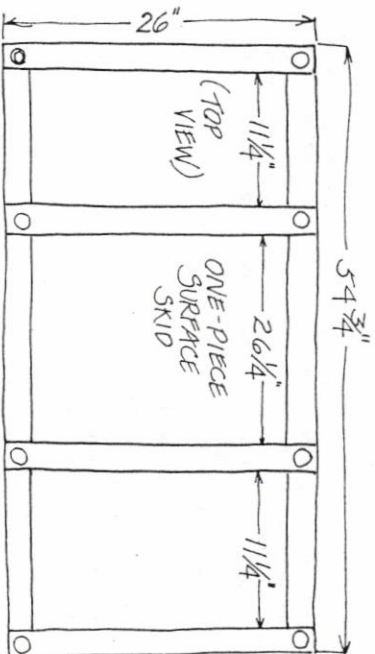
The mini-attic (figure 64) is formed by two skids with pegboard inserts. Drapery hooks inserted in the holes from underneath can be used to hang everything from tea cups to nutcrackers. Tape over the sharp ends with masking tape.

Materials:

- a. 4 pcs. $2" \times 2" \times 48"$ Douglas fir for skid sidepieces.
- b. 2 pcs. $2" \times 2" \times 14"$ for smaller skid's front and back pieces.
- c. 2 pcs. $2" \times 2" \times 30"$ for large skid's front and back pieces.
- d. 1 pc. $\frac{1}{4}" \times 30" \times 48"$ pegboard.
- e. 1 pc. $\frac{1}{4}" \times 14" \times 48"$ pegboard.
- f. 2 pcs. $2" \times 2" \times 25\frac{1}{4}"$ for large insert stresses.
- g. 2 pcs. $2" \times 2" \times 10\frac{1}{4}"$ for small insert stresses.
- h. 8 pcs. $\frac{1}{4}"(20) \times 3$ cap screws to construct skids.
- i. 16 pcs. $\frac{1}{4}"$ washers.
- j. 8 pcs. $\frac{1}{4}"(20)$ hex nuts.
- k. 8 pcs. $\frac{3}{16}(24) \times 2"$ stove bolts to assemble plane inserts.
- l. 16 pcs. $\frac{3}{16}"$ washers.
- m. 8 pcs. $\frac{3}{16}(24)$ hex nuts.

Animated Surface

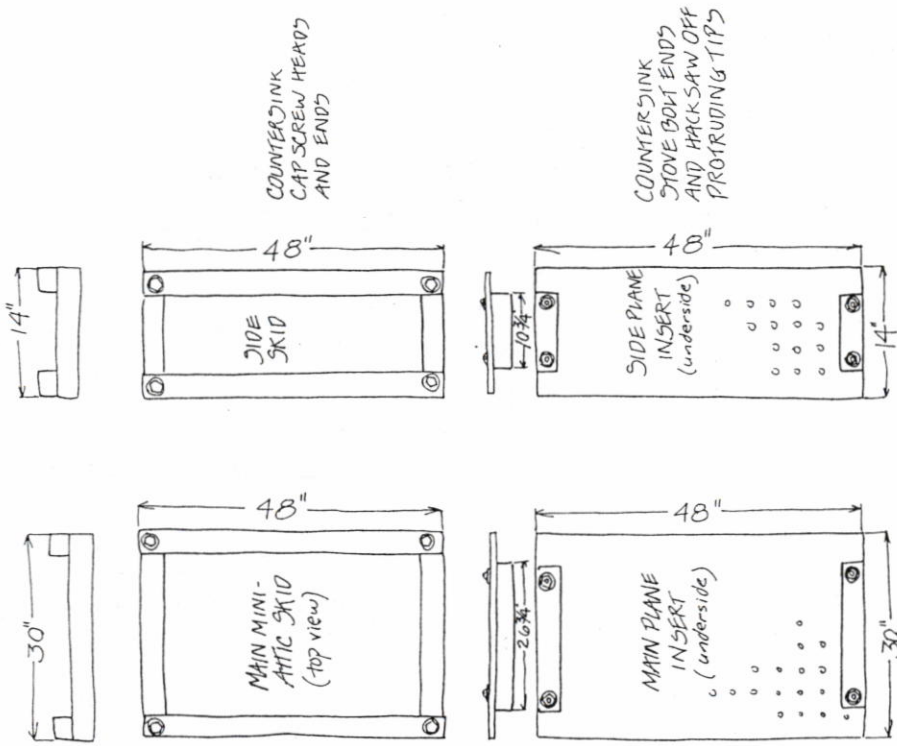
This particular surface is composed of a single skid divided into three parts to accommodate organizer and plane inserts (figure 65). You may want to redesign it to meet your special needs.



COUNTERSINK CAPSCREW
HEADS AND ENDS

SURFACE PLANS

Figure 65

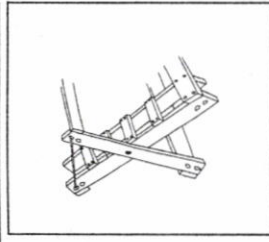


MINI-ATTIC PLANS

Figure 64

2

The X-Frame



Beginnings

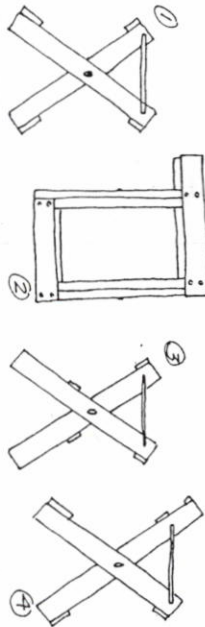
The X-frame forms the roots and branches of people nests. It was an acorn of an idea that slowly sprouted toward the surface over a number of months and then all of a sudden waved its leafy head in the sunshine. Looking back, I can see that my original X-frame was crossbred from many sources: a cross-legged drawing table scavenged from an abandoned attic, the expandable wooden dryer rack that stands in our furnace room, the familiar X-motif used on the redwood furniture we've lived with for the past couple of years. It grew too from my experiences framing houses with my designer/carpenter brother, and, finally, from a happy accident described in the chapter on wall systems. "Happy accident" is the way people usually describe events in which the causality is not clear—I would rather use it to describe a seed-splitting instant of creative certainty.

The X-frame is a modular unit out of which larger systems and supersystems are composed. It can be folded or taken apart to be rebuilt in a new place. All the living system designs described here begin with this single, simple, freestanding structure and are then suited to their respective functions by the addition of the components described in Part I (shelves, seats, surfaces, etc.).

Limbs in Tension

The X-frame superstructure is composed of wood, bolts, and rope; it utilizes the principles of tensile strength—as opposed to the less versatile method of supporting loads on members in compression. It is a symmetrical system of opposing stresses that conserves wood and is both lightweight and indelatably strong.

There are four pairs of wooden members in the X-frame: the left and right (or head and foot) X-braces, the upper tie-members, and the lower tie-members—eight pieces of wood in all. These members can be joined at their ends to form a simple boxlike structure, or the relationships can be changed to create open-ended, open-based, or extended-arm variations (figure 19). The proportions of an X-frame can be stretched vertically to produce the framework for a floor-to-ceiling wall system, stretched asymmetrically to form a crutchlike, elongated into a floating bed or study nest—or stretched in all directions and adapted to a conversation web.



- ① STANDARD X-FRAME
- ② OPEN-ENDED X-FRAME
- ③ OPEN-BASED X-FRAME
- ④ EXTENDED-ARM X-FRAME

Figure 19

Notes on Construction

The generalized, open-ended version of the X-frame consists of two scissor joints and eight lap joints. Time-consuming errors are easy to make, so be deliberate in following the suggested procedure before experimenting with your own approach to raising a frame.

Begin by cutting (or having cut) all framing members to the measures indicated by the specifications at the end of each chapter in Part II. Sand all surfaces and ends until clean and smooth.

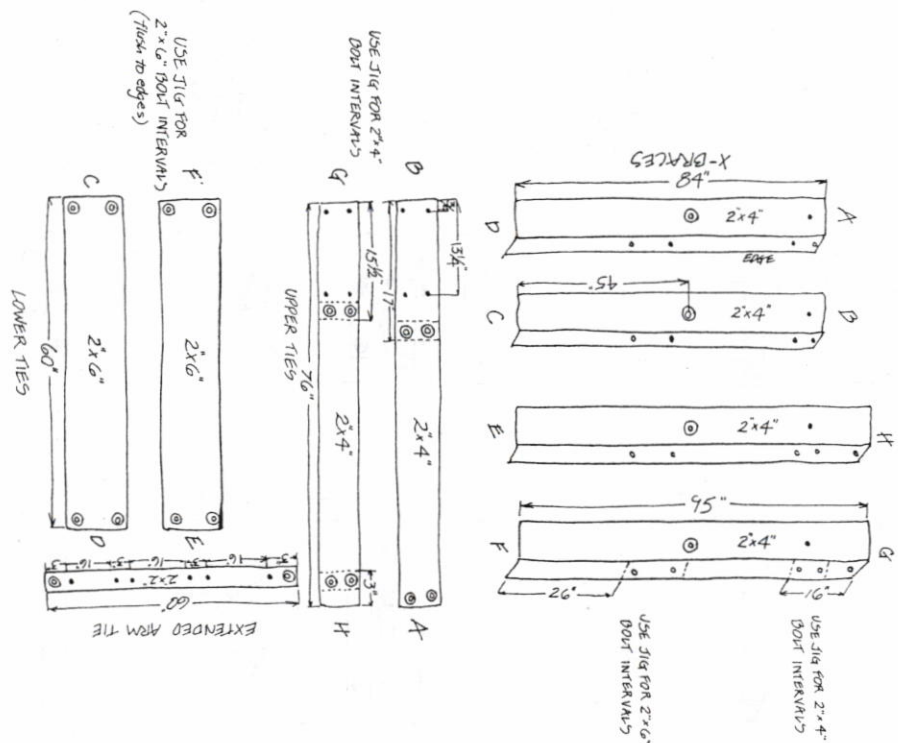


Figure 63

Specifications and Notes on Construction

The X-frame

g' ceiling clearance, single open end, extended arm, open base, casters

An open-based X-frame is formed (figure 63) by positioning the lower tie members about two-fifths of the way up the legs of the X-braces. This arrangement not only allows foot space but also provides the tracks upon which the surface skid rests. The extended arm is formed by using two parallel X-brace members that are twelve inches longer than their partners. The arms are tied together with a "rope-snaked" two-by-two.

Materials:

- a. 2 pcs. 2" x 4" x 95" for X-brace members forming the extended arm.
- b. 2 pcs. 2" x 4" x 84" for short X-brace members.
- c. 2 pcs. 2" x 4" x 76" for upper ties.
- d. 1 pc. 2" x 2" x 60" for extended arm tie.
- e. 2 pcs. 2" x 6" x 60" for lower ties.
- f. 2 pcs. 1/4(20) x 3 cap screws for scissor joints.
- g. 18 pcs. 1/4(20) x 5 1/2 cap screws for frame.
- h. 40 pcs. 1/4" washer.
- i. 20 pcs. 1/4(20) hex nuts.
- j. 20' 1/4" manila rope for X-brace rigging and rope-snaked tie.

Refer to chapter two for notes on adding casters. Check the manufacturer's specifications to be sure the casters are suitable for moving a load of about 300 pounds and a stationary load of about 1000 pounds.

Use assorted S-hooks and hook screws to create convenient hangers for utensils and cookware. Rawhide loops at the ends of utensils like spatulas, wooden spoons, and bowl scrapers make them easier to lift off their hooks. Drill your own holes in handles if they're not already provided.

X-FRAME PLAN
USE DIAGRAMS AND
PROCEDURES OUTLINED IN
CHAPTER TWO AS KEY TO
ASSEMBLY.

Think of the X-frame as two intersecting planes and prepare each one separately as follows:

1. Drill scissor joint and rigging holes in a pair of X-brace members according to plans, countersinking ends when necessary. Lay out members as you proceed, labeling both members of each joint (figure 20).
2. Drill holes for two lap joints in one upper tie member. Also drill all holes required for hanging components (it's easier and safer to do your drilling before the system is erected, although it can be done afterwards). For joint holes, use a prepared jig block as a guide.
3. Using the same jig, drill the corresponding joint holes in the upper edge of the X-brace members. Label the left joint A and the right, B.
4. Now, as if you were flipping the plane over, reverse the positions of the X-brace members and repeat the above procedure with a lower tie member (using appropriate jig). Label the left joint members C and the right, D.
5. The procedure for the second plane is similar, beginning with the rigging and scissor joint holes. This time, however, begin by predrilling joint holes in the lower tie member and labeling the left joint member E, the right, F.
6. Once again, flip the positions of the X-brace members and then predrill holes for the upper tie member. Label the left joint G, the right, H.
- When building an X-frame with single or double open ends, take care to keep the extended upper ties facing in the proper direction.
7. Wipe all members with linseed oil before assembly, taking care not to wipe away the joint labels.
8. Assemble the X-braces first, laying them parallel on the site you have chosen for the nest.
9. Add upper and lower tie members to the exposed face, pinning them in place with partially inserted cap screws or carriage bolts. Refer to joint labels for proper positions (figure 21).
10. Flip frame over and add remaining ties—again, tap bolts partially into holes, leaving about 1/4 inch of the hilt exposed.

Note that the upper tie extension on the second face is 1 1/2 inches shorter on the open end, but that it overextends 1 1/2 inches on the closed. This adjustment compensates for the width of the X-brace member and makes the extensions evenly matched.

11. Thread and knot ends of the X-brace rigging to the top of each brace (figure 22). Raise the frame and expand the X-braces as far as the rigging will permit. Adjustments in rigging should be made now if necessary.

12. Tap bolts home and secure tightly with washers and nuts.

13. Lightly sand away any remaining pencil markings and wipe away excess oil with soft rag.

I have managed alone, precariously, to assemble all but the largest X-frames with this method, but I recommend calling a friend to help with the erection. Together you'll probably be able to find an easier way.

To dismantle an X-frame for moving, it is sometimes necessary to use the end of a spare bolt as a punch to tap joint bolts from their settings. The punch bolt should have a slightly smaller diameter than the one it's punching out. A great deal of struggling can be avoided by soaping all bolt shanks before assembling.

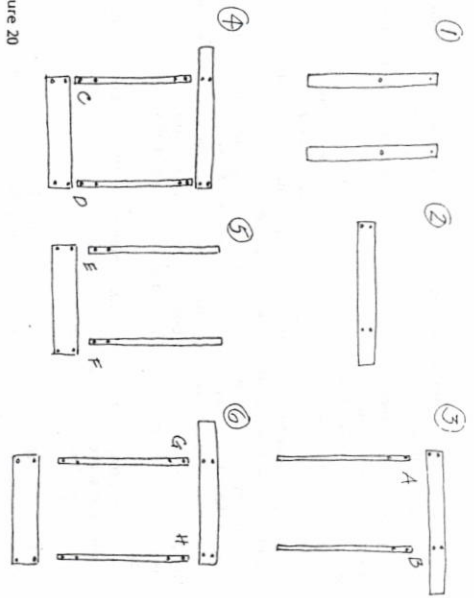


Figure 20
LAYING OUT AND DRILLING
X-FRAME MEMBERS

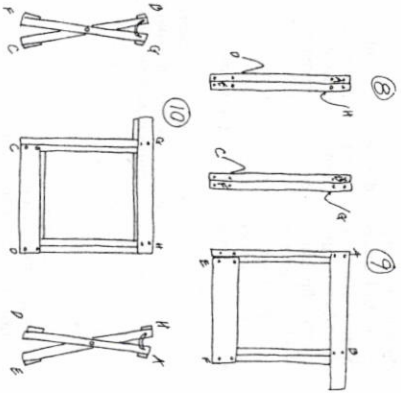
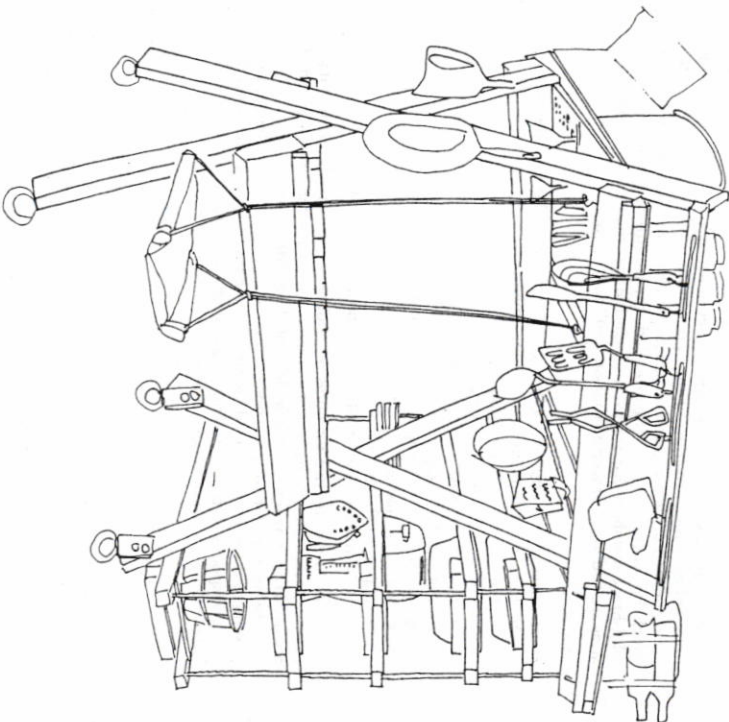


Figure 21
ASSEMBLING X-FRAME MEMBERS



CRAFT KITCHEN WAGON

Figure 62

Conventions versus Craftkitchens

The dominant theme of the conventional kitchen and workshop is the cabinet and counter. Admittedly, such wall-to-wall arrangements of knotty pine give the impression of efficiency, roominess, and everything in its place. Cabinets are, however, often the best examples of crudely adapted, overbuilt storage systems. They are essentially glorified wooden boxes stuck on the wall or on the floor. Their doors make lumps on your head or shins, and their prices empty your pockets. To unbury the egg poacher, many of us face the ordeal of dumping every pan (and the archaic coffeepot) onto the already appliance-strewn counters—or else we blindly reach into the dark recesses of what has come to be known as “under the sink.” Storage systems would be much nicer if they were at eye level and open on all sides. Counter space would be more usable if it weren’t skyscrapered with electric toasters, blenders, and can openers.

Craftkitchens are nests that house a wide variety of tools, utensils, supplies, and ingredients. They differ from conventional storage systems in that their organizers and surfaces are interchangeable. The working area can be reordered in a moment’s time to accommodate a task totally unrelated to the previous one. The everything-has-its-place format wastes space and energy. Instead of having one place, everything has convenient alternate places, thereby freeing the most valuable areas to be recycled and used more efficiently.

In a craftkitchen, walls are left uncluttered by cumbersome cabinetry (I would much prefer light and sun-breathing windows while kneading my dough). Besides, all that quaint woodwork costs twenty-five times as much as a craftkitchen—and when you move, taking your custom-fitted cabinets with you is not very practical.

The craftkitchen is built in a single open-ended X-frame (figure 62), with one extended arm for hanging pots, pans, and utensils. It has two upper skids with pegboard inserts, which form a mini-attic for less frequently used equipment like canning pots and jars, double boilers, pizza pans, and so on. The pegboard creates a hundred convenient spots to hang other lightweight craftkitchen paraphernalia—ladles, spatulas, forks, measuring spoons and cups, sifters, glass racks, tea cups, graters, and corkscrews.

The positions of the lower ties are modified to support an animated working surface complete with interchangeable plane inserts and organizers. This surface can be converted to a dining table with seats for any number from one to six. The standard craftkitchen has room for four hanging strap seats of six conventional stool-type seats.

The open end houses five or six 14-inch-deep hardboard shelves and/or racks. The shelves accommodate openers, blenders, toasters, mixing bowls, and all the other normally inconvenient kitchen conveniences you can think of. The racks store various organizers when these are not being used in the surface.

The entire assemblage looks like a colorful peddler’s wagon, complete with casters for mobility and, if you like, stenciled fruit, leaf, and flower motifs. Craftkitchen wagons can also be adapted as mobile workbenches.

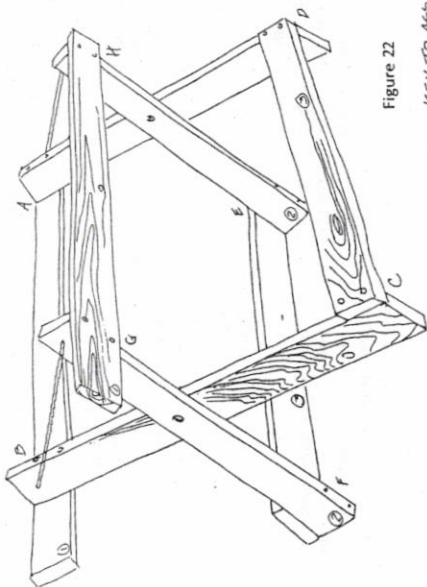


Figure 22

KEY TO ASSEMBLING
X-FRAME

- ① UPPER TIES
- ② X-BRACES
- ③ LOWER TIES

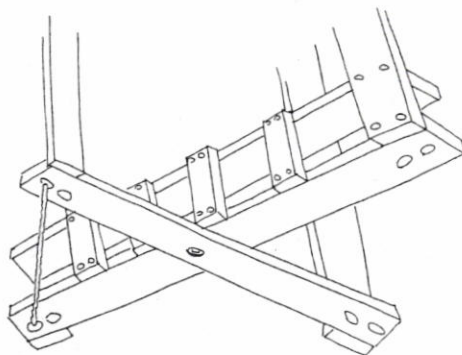


Figure 23

X-FRAME
WITH LADDER

Variation with Ladder

As mentioned earlier, the proportions of X-frames depend on what the frames are intended for. Many situations (particularly the floating bed and desk loft) demand accessibility to upper levels. This X-frame variation, equipped with a built-in ladder, should satisfy that requirement.

The ladder variation demands only one additional member and three or four rungs (figure 23). One diagonal of an X-brace is incorporated as a stringer or sidepiece to the ladder and a matching length is added parallel to it. Rungs are spaced a foot apart and are secured with $\frac{1}{4}$ " x $3\frac{1}{2}$ " lag screws. Round the tread edges with sandpaper to make them easier on your feet.

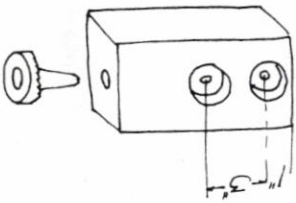
Ladders can be used with open-ended frames or with the closed-ended species of X-frames, which are good for butting against walls or displaying tapestry, rugs, macrame, or other one-dimensional visuals.

Variation with Casters

Once a nest has been expanded to its permanent width, ball casters can be added to the feet of the X-braces. Systems with casters help to recycle space for other activities. For instance, a craftkitchen with casters can be pushed into the corner when you need its space for something else. A mobile kitchen system also reduces distances between the food preparation area and the stove, the refrigerator, and the sink. The entire system can be moved to an optimal energy-saving floor position and then removed later so it doesn't interfere with after-dinner traffic.

Add casters (figure 24) to a craftkitchen, or to any system, by cutting four five-inch blocks from scraps of two-by-three, rejecting any pieces with knots or the least hint of a split. Center and drill two joint holes, one and three inches from the top of the block. Then drill corresponding holes in the feet of the X-braces.

Next, drill holes to accommodate stem-type casters, as directed on the caster package. Hammer the tubular inserts provided into the holes, protecting the rims from the hammer blows with a block of wood. Bolt the prepared blocks to braces. Finally, insert caster stems until they lock into place.

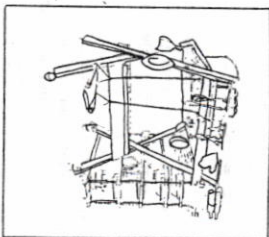


CASTER ASSEMBLY

Figure 24

9

Craftkitchen Wagons



The Early American Craftkitchen

Kitchens have traditionally occupied central positions in the psychic space of the home. The early American kitchen was more than a simple place to heat up a TV dinner. It was a marvelously equipped workshop, often dominated by a giant hearth, filled with apparatus for making everything from candles and cornhusk dolls to pickles and preserves. Skillets, trivets, irons, pots, kettles, and other craft/culinary tools and utensils were accessibly displayed.

Festooned strings of dried apples, onions, and peppers hung from above the hearth. Sprays of herbs and flowers mingled scents with whatever stew was steaming over the coals. It must have been a pleasant place to work—even though the work was never-ending.

Since those times, through some unfortunate transformation, the kitchen and the workshop have become separated and specialized. Perhaps this is because our crafts have become somewhat indigestible. It's difficult to imagine a bottle of acrylic paint alongside a bottle of barbecue sauce. Vegetables and dyes are no longer cousins. Then again, perhaps the split has occurred because our processed foods have also become less digestible. This chapter is dedicated to reuniting kitchens and craft centers—at least as much as possible.

This method can also be used with full-length floating lounges and with the convertible sofa. Its single disadvantage is that it makes disassembling the seat for washing more of a chore.

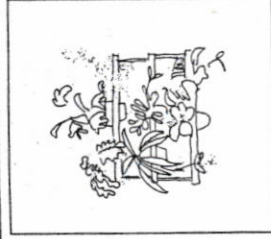
- h. $1\frac{1}{2}$ yds. $\times$ 22" fabric for strap (hem and wrap allowance included).
- i. 2 pcs. 1 yd. $\times$ 26" cushion fabric.
- j. $5\frac{1}{4}$ " manila rope to hang seat.
- k. 1 pc. 1" $\times$ 22" dowel or closet pole.
- l. 2 pcs. heavy-duty screw hooks.
- m. Upholstery tacks or staples.
- n. Cotton batting or polyester fill.
- o. Heavy-duty thread.

Shopping List for Liberation Desk Loft

- 7 pcs. 2" $\times$ 4" $\times$ 8" Douglas fir or yellow pine
- 1 pc. 2" $\times$ 8" $\times$ 10' Douglas fir or yellow pine
- 8 pcs. 2" $\times$ 2" $\times$ 10' Douglas fir or yellow pine
- 10 pcs. $\frac{1}{4}$ (20) $\times$ 3 cap screws
- 18 pcs. $\frac{1}{4}$ (20) $\times$ 5 $\frac{1}{2}$ cap screws
- 8 pcs. $\frac{1}{4}$ $\times$ 3 $\frac{1}{2}$ lag screws
- 64 pcs. $\frac{1}{4}$ washers
- 28 pcs. $\frac{1}{4}$ (20) nuts
- 2 pcs. 2 $\frac{1}{4}$ " brass hinges
- 13 pcs. 3/16(24) $\times$ 1 $\frac{1}{2}$ stove bolts
- 26 pcs. 3/16" washers
- 24" $\times$ 48" (quarter sheet) $\frac{1}{4}$ "-thick hardboard
- 48" $\times$ 48" (half sheet) $\frac{1}{8}$ "-thick hardboard
- 3 $\frac{1}{2}$ to 4 yds. $\times$ 36" canvas or heavyweight duck
- 2 $\frac{1}{2}$ to 3 yds. $\times$ 44" durable cotton or cotton/polyester
- 8 lbs. polyester fill
- 3 yds. cotton batting
- Heavy-duty thread
- 100' manila rope
- 4 pcs. heavy-duty hook screws
- 1 pc. 1" $\times$ 8" wooden dowel or closet pole
- Upholstery tacks or 5/16" staples

3

Organic Storage



The Intimacies of Storing

The word "organic" is widely used to connote living things and things that interrelate systematically, like living things. An organic storage system is one that lives with us symbiotically, as a sort of cooperative organism. It's a system that helps us get from one day to the next—like a considerate friend who's there when needed, but at the same time is never a nuisance.

The hollows into which we squirrel away clothing, tools, utensils, or old love letters all belong in an intimate way to our bodies, to our lifestyles, and, most importantly, to our histories. Closets or drawers, with their contents, represent rich metaphors for their users' memories. They store articles that have been with us in the past and that provide us with a jumping-off point into the future.

Nests with storage components are nodes of continuity in our personal warps of time. Whether they are protecting the cups and plates from which we are nourished each day or shelving the books we will read or have already read, whether they preserve the clothing in which we present ourselves or harbor the tools of a craft with which we identify and express ourselves—in every case, storage places provide a comforting sense of being familiar with oneself. They are places where confidence is cradled and hope is safely stowed, like acorns for the winter.

Accessibility

We have already mentioned that an organic storage system is there when needed—or, translated into furniture-talk, that it's accessible, intimacy and accessibility merge when we recognize that intimate space need not be a guarded, sequestered, neurotically private space. Instead it is an unashamed space, immediately available to ourselves and unhidden from friends and visitors. Returning to the memory-metaphor, storage systems should not be used to suppress things we would rather forget (skeletons in the closet). Neither should they become mildewed museums of valuable trophies that have become so burdensome as to inhibit us from readily partaking of the future. Storage systems should be honest places that speak without dissembling about who we are.

Organic storage means more than putting something away. "To put away" has a very fatalistic ring to it. Perhaps that's why so many children's stories deal with toys or objects secretly coming to life on their shelves. Childhood imaginations cannot accept the bland reality of dead-storage. Living-storage systems are places where our possessions might, at any moment, begin to dance like so many Pinocchio's. They should be places that breathe—doorways between all the little-noticed cycles of life that empty and then fill, preserve and then share, remember and then seek.

Efficiency

The very word has an unfriendly, inorganic, enamel glint to its sound—but try to name an organism that isn't efficiently proportioned and adapted to its natural habitat. In the context of being human, *efficient* means minimum waste of energy, materials, expense, and, of course, space. Unfortunately, in the average home it has become an obsession to have huge volumes of enclosed storage space. Perhaps it's because we don't want the architectural effect disturbed by clutter, or because we have a lot to hide, or simply because we can't get ourselves to throw anything away.

Inefficient storage chokes and constipates the physical and psychic space of its cohabitant. We begin to feel that there is no room to do anything—except perhaps watch the tube. Cartoons are not so far off when they depict some brave Magoo who has ventured to open a closet and been buried under cascades of junk. Creative storage systems do not cram; they do not engender vague fears. Instead they encourage people-energies (psychic or physical) by liberating spaces that were unsympathetic or clumsily occupied before.

Efficient storage systems should never dominate space that can be used in some other way. Conventional bedroom dressers, for instance, do not comply with this rule. Not only do dressers encumber their respective plots of floor and corresponding ceiling space, they also make unusable the space that becomes occupied while the drawers are extended. Thus, the typical dresser, like the rook in a game of chess, dominates not only its own square but also the squares in its path. For two people-pawns, this means the waste of over 250 cubic feet of potential living space. Such space could be used for more efficient systems or could be left free to lay down exercise mats, clo-

Seating

The seats are suspended from the loft desk's ties and are constructed of heavyweight cotton duck or canvas. When rigging the lounge and desk seats, adjust the ropes until you find the position comfortable. See chapter five for construction and sewing details.

Materials:

- a. 2 to 2½ yds. × 22" cotton canvas for lounge strap (with hem and tubing allowances included).
- b. 2 pcs. 1½ to 2 yds. × 26" durable cotton or cotton/polyester for cushions.
- c. 6 lbs. polyester fill to stuff cushions.
- d. 20' ¼" manila rope to hang lounge.
- e. 4 pcs. hook screws.
- f. 2 pcs. 1" diameter × 22" dowel.
- g. Heavy-duty thread.

The desk seat is a modified lounge that conforms to the shape of your body but is not body length. For a custom-fitted length, measure from the knee to the navel and add 14 inches for pole tubing.

Dab's desk seat is an experiment with a no-sewing method of seat construction (figure 61). The back of the seat is first tacked and then wound several times around the upper tie member, with cotton batting slipped between the plies. The front is similarly tacked, padded, and wound round a 22-inch length of closet pole to hold it fast.

The advantages of this method include ease of construction, greater adjustability (seat fabric can be shortened or lengthened by winding more or less fabric around the dowel or upper tie), and a savings on material and labor. The fabric- and batting-padded wood is also easy on your back and thighs—although, in an upright position, you may need a small, firm cushion to support your back.

NO-SEW SEAT

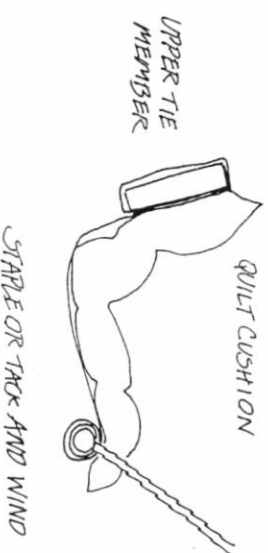


Figure 61

The plans below call for:

Materials:

- a. 5 pcs. $\frac{1}{8}$ " $\times$ 8" $\times$ 36" hardboard for shelves.
- b. 2 pcs. $\frac{1}{8}$ " $\times$ 8" $\times$ 20" hardboard for half-shelves.
- c. 14 pcs. 2" $\times$ 2" $\times$ 36" Douglas fir for stiffeners.
- d. 4 pcs. $\frac{3}{16}$ (24) $\times$ 1 $\frac{1}{2}$ " stove bolts.
- e. 8 pcs. $\frac{3}{16}$ " washers.
- f. 4 pcs. $\frac{3}{16}$ (24) hex nuts. The stove bolts indicated here are necessary only for fastening hardboard to half-shelf stiffeners.
- g. 65' $\frac{1}{4}$ " manila rope to hang shelves.

The shelf heights and spans can of course be adjusted to suit your whims. Leave space open next to the lounge for utility surface, a good place to rest your coffee and doughnuts. The open portions of the half-shelves can be used as racks for potted house plants. If extra sets of shelves are desired, add ten inches per set to the upper tie members. See figure 60 for variations—a third set of shelves within the alcove, a third set within a second open end, or a third and a fourth set on an X-frame that has been extended a total of twenty inches.

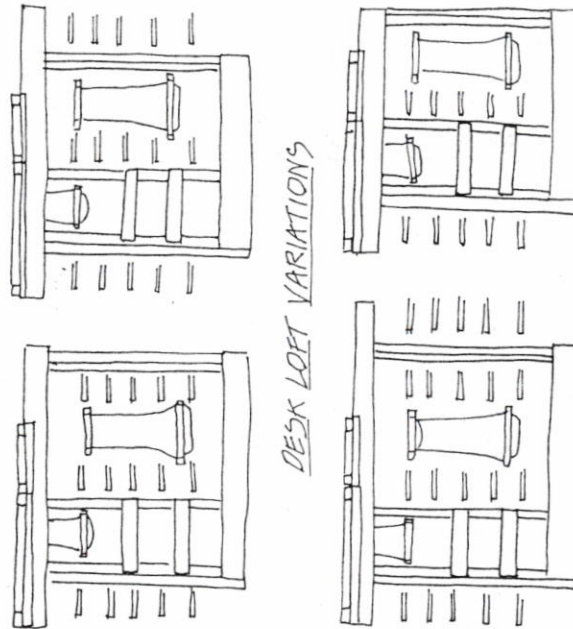


Figure 60

thing patterns, maps to far-off places, jigsaw puzzles—anything. Sometimes it's nice to have a spot where you can just stretch out and take a deep breath. Conserving space does not always mean squashing as much as possible into it.

Most inefficient storage facilities are crudely carved to enclose space. Only rarely are they adapted to a specific function. This also results in wasted space, inconvenience, and what might be called "overbuild." Furniture is overbuilt when the money, materials, and labor used to modify space are excessive. Not every object needs four walls to enclose it and one-inch-thick pine shelving to support it (a spider's web is not made of steel cables). Cloth stretched over a wooden frame, net sacks, and net pouches work very well with linens, towels, clothing, and soiled laundry—and the materials are much less expensive than pine shelving.

When designing storage, it is important to consider the size, shape, weight, and purpose of the object to be stored. A good example is the way stemmed glasses are stored in some restaurants and bars. They are simply hung upside down between two tracks and slid off as needed. Below are some symbiotic modes of storage that we've adopted. Later chapters integrate these components into overall systems.

Shelves and Poles without Joints

Hanging shelves and poles is an idea that—while not new—certainly deserves to be propagated. It conserves wood because the suspended components require no supportive backs or sides. Nothing more complicated than drilling holes, lacing rope, and tying knots is involved in hanging a shelf or pole.

Materials:

- a. 1" pine shelving, or hardboard reinforced by 2" $\times$ 2" Douglas fir, or closet pole
- b. $\frac{1}{4}$ " manila rope

Use tension holes to hang shelving, and single holes and knots at each end of the closet poles (figures 25-1, 2). Shelves made of semiflexible hardboard require reinforcement (figure 26). For shelf widths less than ten inches, simply use stiffeners lengthwise and drill matching tension holes in both the hardboard and the two-by-two (figure 27). The rigging alone will bind the board to the stiffeners. For hardboard shelves wider than ten inches, build two-by-two frames with four lap joints. Fasten the joints and, at the same time, the surface to the frame with $\frac{3}{16}$ (24) $\times$ 2 stove bolts, washers, and nuts.

When assembling a series of shelves, adjust depths according to their uses. Include half-shelves at intervals to provide extra-deep shelf spaces. A half-shelf hung above a shelf intended for a turntable provides an opening in which you can easily handle dust covers and albums. Note that two extra $\frac{1}{8}$ -inch holes must be drilled in the full shelf immediately above a half-shelf.

OVERSIZE HARDBOARD SHELF

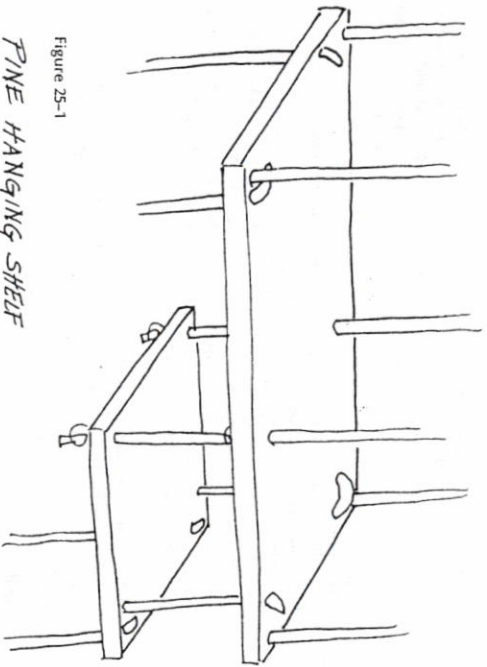
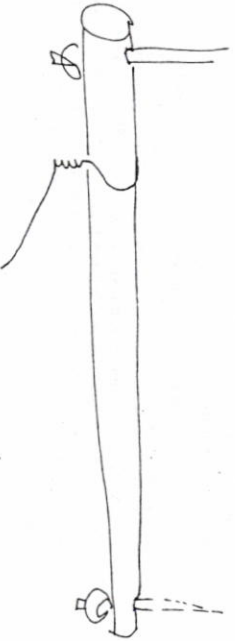


Figure 25-1

PINE HANGING SHELF AND HALF SHELF



HANGING CLOSET POLE

Figure 25-2

The Animated Surface

The surface specified below is composed of two skids that can be slid to the side when access to the file shelves is necessary (figure 58).

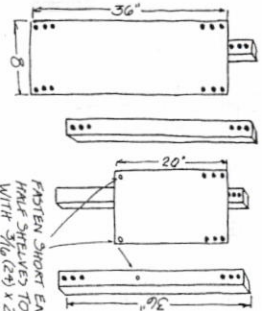
Materials:

- 4 pcs. 2" x 2" x 45" for side pieces.
 - 2 pcs. 2" x 2" x 33" for front and back.
 - 2 pcs. 2" x 2" x 16" for front and back.
 - 8 pcs. 1/4(20) x 3 cap screws to assemble skids.
 - 8 pcs. hex nuts.
 - 16 pcs. 1/4" washers.
 - 2 pcs. 2 1/4" brass hinges to join central skid to its insert.
- The two skids are designed to accept two plane inserts and two organizer inserts. I've chosen to make the plane inserts of hardboard; the contain-ers are Rubbermaid basins. You may choose to use other surface materials, such as Plexiglas, plywood, or pine, or some other type of organizers—straw baskets tacked to the inside edge of the skid, clay pots, or even large, rec-tangular Pyrex baking dishes, in which case the skid dimensions and design must be modified. The plane insert situated above the hatchway is hinged to its skid to allow easy access to the upper level.
- 1 pc. 1/4" x 24" x 33" hardboard for central insert.
 - 1 pc. 1/4" x 16" x 13" hardboard for side insert.
 - 2 pcs. 2" x 2" x 29 1/4" Douglas fir for stiffening members.
 - 2 pcs. 2" x 2" x 12 1/4" Douglas fir for stiffeners.
 - 9 pcs. 3/16(24) x 1 1/2" stove bolts to assemble plane inserts.
 - 18 pcs. 3/16" washers.
 - 9 pcs. 3/16(24) hex nuts.

The Shelves

5 full shelves, 2 half-shelves

The desk loft can support up to ten shelves or half-shelves. Each hard-board shelf must be reinforced with two two-by-two stiffeners (figure 59).



SHELF, HALF-SHELF AND STIFFENERS

POINTER SHORT END OF HALF SHELF TO STIFFENERS WITH 3/16(24) x 2 STOVE BOLTS

Figure 59

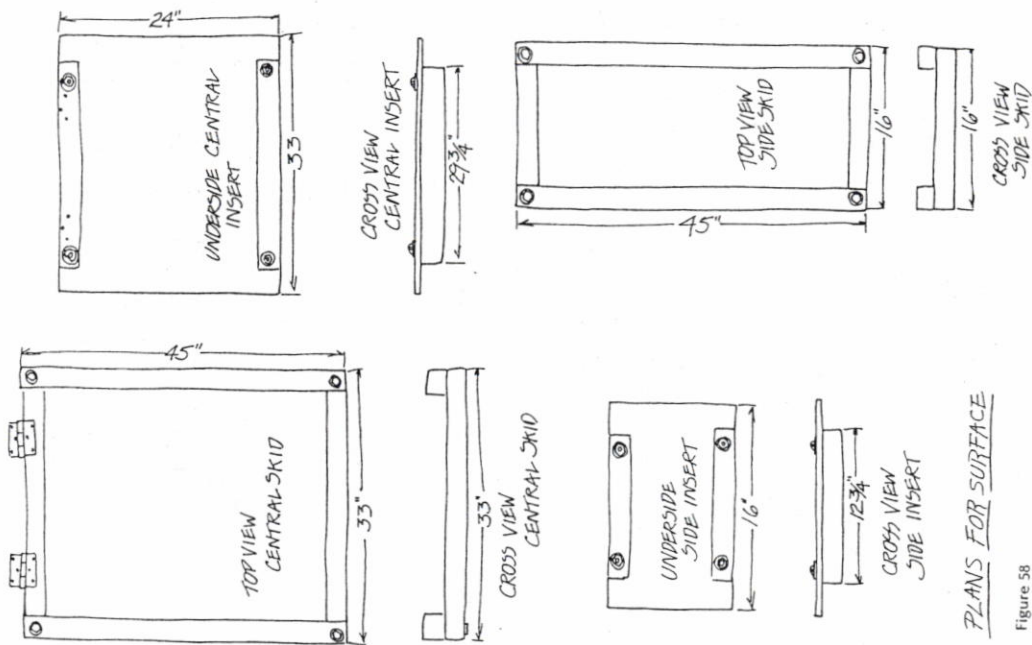


Figure 58

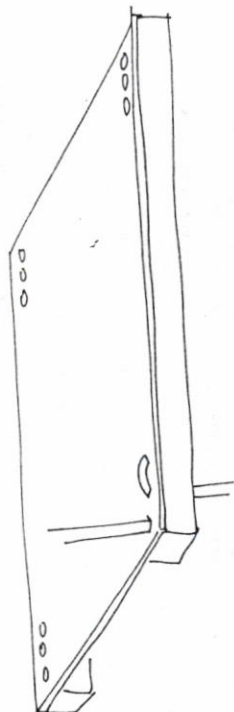


Figure 26

HARDBOARD HANGING SHELF

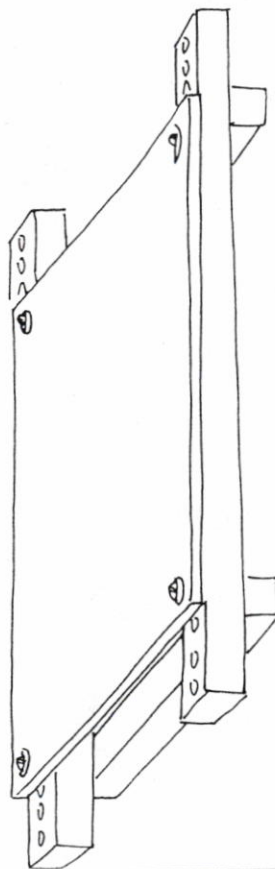


Figure 27

Cloth-stretched Shelves

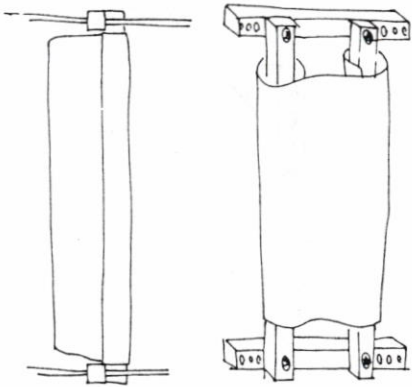
Stretched shelves are also hung, but instead of a solid slab of wood or hardboard, they consist of cloth stretched over a wooden frame (figure 28). The frame can vary in size according to your purpose. Stretched shelves are ideal for such soft foldables as jeans, T-shirts, sheets, sweaters, blankets, towels, table linens, and other dry goods.

Materials:

- Medium-weight cotton (cotton duck works well).
- $\frac{1}{4}$ " manila rope.
- 2" x 2" Douglas fir.
- 4 pcs. $\frac{3}{16}$ (24) x $\frac{3}{16}$ stove bolts.
- 8 pcs. $\frac{3}{16}$ washers.
- 4 pcs. $\frac{3}{16}$ (24) hex nuts.
- Upholstery tacks or staple gun and staples.

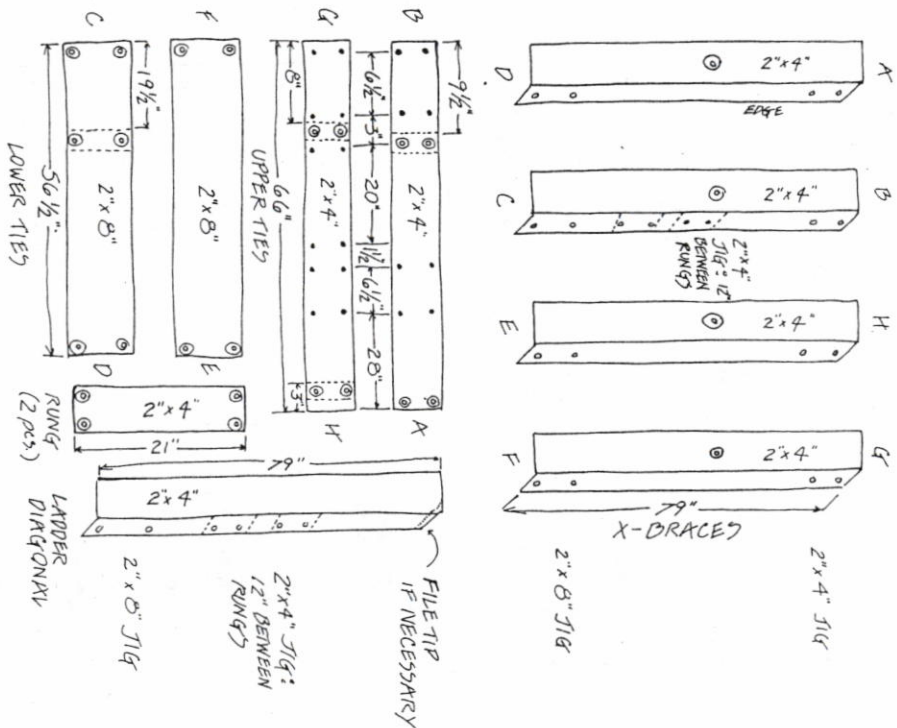
Stretched shelves consist of a rectangular frame joined at the corners with lap joints. At each corner an end of two-by-two is left to protrude three inches, through which $\frac{1}{4}$ -inch tension holes are drilled for the rigging.

The fabric can be allowed to hang three or four inches below the frame level or can be stretched nearly taut. Use tacks or staples to fasten fabric to the inside of the frame; wrap cloth once around each two-by-two framing member. Netting can be substituted for fabric to make it easier to find those things that have a tendency to get buried.



CLOTH-STRETCHED
SHELF ASSEMBLY
AND CROSS VIEW

Figure 28



X-FRAME PLANS
USE DIAGRAMS AND PROCEDURES
OUTLINED IN CHAPTER TWO
AS KEY TO ASSEMBLY

Figure 57

hung, as in the case of the bed. Instead, the upper ties form tracks upon which an animated surface is supported. The nest also includes an elevated desk seat situated between the stringers of the ladder.

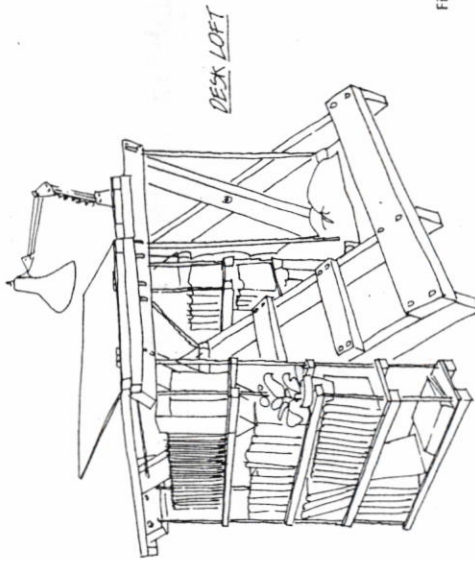


Figure 56

Specifications and Notes on Construction

The X-Frame

Ladder variation, single open end, ceiling clearance 8', 3 1/4" x 5 1/4" floor area

Build the X-frame according to the procedure outlined in chapter two and the plans in figure 57. Note that the upper tip of the ladder diagonal may need to be rounded with a file so it won't interfere with the plane insert.

Materials:

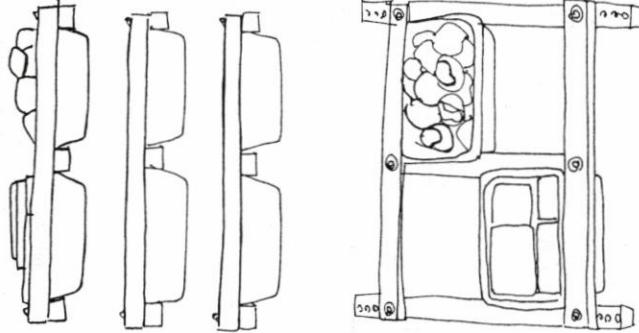
- 5 pcs. 2" x 4" x 79" for X-braces and ladder diagonal.
- 2 pcs. 2" x 8" x 56 1/2" for lower ties.
- 2 pcs. 2" x 4" x 66" for upper ties.
- 2 pcs. 2" x 4" x 21" for rungs.
- 2 pcs. 1/4(20) x 3 cap screws for scissor joints.
- 18 pcs. 1/4(20) x 5 1/2 cap screws for frame.
- 8 pcs. 1/4 x 3 1/2 lag screws to fasten ladder rungs.
- 20 pcs. 1/4(20) hex nuts.
- 48 pcs. 1/4" washers.
- 10' 1/4" manila rope for X-brace rigging.

Racks and Inserts

Racks also begin with a frame, which, when hung horizontally and sized appropriately, can be used to support objects that require something more than a one-dimensional surface. For instance, you probably wouldn't store a pile of eggs on an open-edged, flat shelf.

Instead of stretching material across the rack frame, basins or other lipped containers are inserted into the framed openings (figure 29). The perimeter lip, of course, keeps the container from falling through. Basin inserts are suited for loose articles, such as socks and underwear—or shoes, sneakers, sandals, and slippers, since the basins are easily removed and washed.

To construct racks for basins, build a rectangular frame to match the inside width of your basin. Rubbermaid dishpans, for instance, measure thirteen inches across the opening and so require a frame with an inside width of thirteen inches.



BASIN INSERTS USED
AS DRESSER

Figure 29

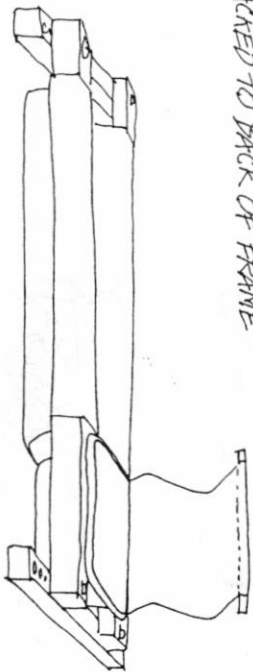
Basin inserts are most effectively used in combination with stretched shelves (figure 30). They can also be used by themselves in dresserlike storage components that push in instead of pulling out into paths of circulation. They don't really save space, but under certain circumstances, they use it more efficiently. When you want to reach into a basin on one of the lower levels, you push the basin directly above it to the rear.

The storage function often becomes synonymous with the display function. Racks can also be adapted to the traditional flowerpot. The advantages of using hanging racks for potted plants (figure 31) are that no floor space is wasted on plant stands and that access to windows remains unobstructed. In addition, plant racks are an easy way to make maximum use of your share of sunlight. The average-sized window easily has room for four racks, with three plants to a rack. Best of all, it is nearly impossible to knock a pot insert to the floor.

Construct small rectangular frames of two-by-two or pine baluster. The opening must be gauged narrow enough to catch the lip of the flower pot, and the length depends on how many pots you would like in a rack.

To prevent excess water from draining through your pots and onto the floor, arrange plants so that one hangs directly over the next. The bottom row of pots should be either corked or of the variety made with screw-on saucers.

NOTE: DOWEL-STRENGTHENED COVERLETS FOR PROTECTING BASIN CONTENTS MAY BE TACKLED TO BACK OF FRAME

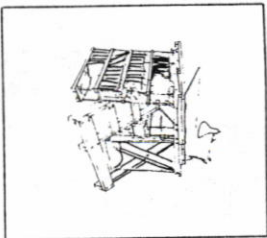


CLOTH-STRETCHED SHELF COMBINED WITH BASIN INSERT

Figure 30

8

The Liberation Desk Loft



A Bird's-Eye View

The liberation desk loft is a compact study nest that combines many features to boggle the imagination. It was designed especially for Deb, who has needed a place to consolidate for quite a while. Our major considerations were to allow for a well-organized working surface, plenty of file space, room for a typewriter, and catchalls for all sorts of typical desk paraphernalia, such as stamps, staplers, rulers, erasers, and stationery.

By using both horizontal and vertical spaces, we were able not only to incorporate all these spaces but also to hang two sets of bookshelves with a capacity of over two hundred books, and a body-length reading lounge that can be made to face in either of two directions or detached completely and used somewhere else (figure 56). The lounge is a modern equivalent of the old-fashioned, high-backed rocking chair—you can sit in it for hours. The entire system occupies about the same amount of space as the average-sized office desk and desk chair.

It's an inspiring place to work, sitting astride pillars of your favorite books. Everything is within arm's reach or else a few steps away—including a lounge to sink into on reading or daydreaming breaks.

The desk loft is stylistically similar to the floating bed, except that the ladder ascends through a hinged hatch to an animated surface composed of two skids—not a mattress. A second difference is that the upper level is not



HANGING PLANT
RACKS

Figure 31

Net Sacks and Pouches

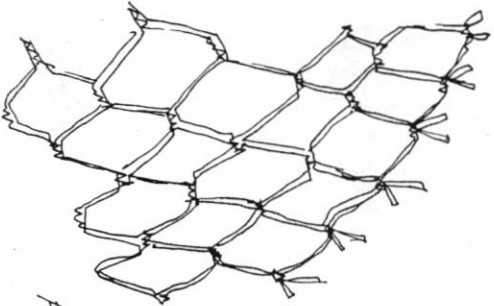
Netting is light, strong, see-through, airy, inexpensive, and easy to work with (figure 32). Pouches made of netting are good for miscellaneous objects that need to be stored close at hand. The sacks are good for large quantities of laundry or for storing out-of-season clothing.

Materials:

- Strong fishnet, nylon net, or other strong synthetic mesh.
- Nylon rope or synthetic cord for easy-sliding drawstrings on laundry sacks; manila rope for everything else.
- Cord or carpet warp for binding up the bottoms and sides of sacks and pouches.
- Small hook screws or tacks.

Cut netting to double the size of the pouch or sack desired. Fold it in half and bind two of the open edges with cord. Tie overhand knots through at least every other pair of squares.

Weave manila rope (nylon for drawstrings) around the perimeter of the remaining open edge. Knot the ends where they meet and tack or hook the opening wherever it's needed. A good place for a pouch is at the head of the floating bed, for things like books, night creams, Raggedy Ann dolls, or whatever. Laundry and storage sacks fit well under floating beds or beneath the ladder to a floating bed. Put winter and summer clothes in large plastic garbage bags, with mothballs when necessary, before tossing them into storage sacks.



FISH NET

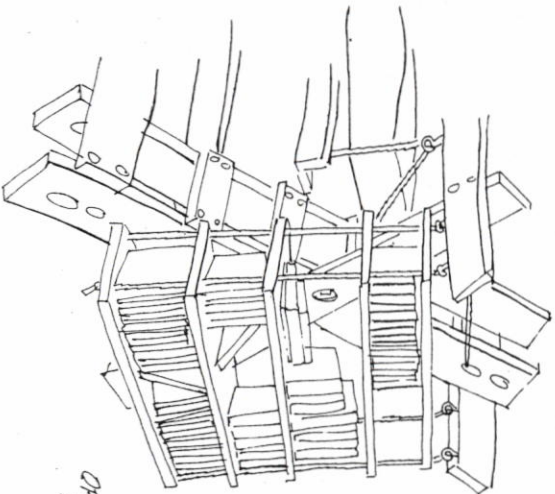
Figure 32

Open-ended Bed Frame and Wall System

Cantilevered shelves and racks can be incorporated into any bed system, no matter what the size or clearances. This system (figure 55) can be used effectively for a screen of house plants or for library space. The upper shelf works well as a night table.

Shopping List for Floating Bed

- 7 pcs. 2" x 6" x 8' Douglas fir
- 2 pcs. 2" x 8" x 8' Douglas fir
- 4 pcs. 2" x 4" x 8' Douglas fir
- 1 pc. 2" x 3" x 10' Douglas fir
- 18 pcs. 1/4(20) x 3 1/2 cap screws
- 6 pcs. 1/4(20) x 5 1/2 cap screws
- 72 pcs. 1/4" washers
- 28 pcs. 1/4(20) hex nuts
- 2 pcs. 3/4(16) x 3 cap screws
- 4 pcs. 3/8" washers
- 2 pcs. 3/4(16) nuts
- 16 pcs. 1/4 x 3 1/2 lag screws
- 2 pcs. hook screws
- 20' 1/4" manila rope
- 25' 1/2" manila rope



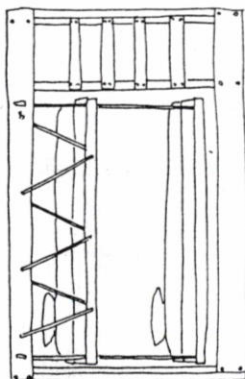
OPEN-ENDED BED
AND WALL SYSTEM

Figure 55

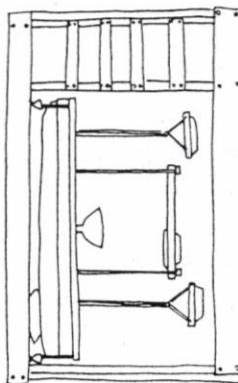
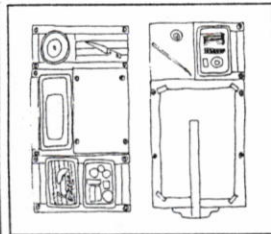
Bunk Variation

Bunks (figure 54) need only an additional twenty feet of half-inch manila rope and a second box spring support. The X-braces will stand closer to the vertical with narrower mattresses.

Add rope guards by lacing $\frac{1}{4}$ -inch manila rope from the upper ties to the support tracks. Guards are also formed by upper ties that have been positioned to prevent the sleeper from rolling overboard.



BUNK VARIATION

**Animated Surfaces****Receptive Bellies**

Animated surfaces cooperate with whatever is happening on their receptive bellies. They are not lethargic, but instead caress and respond to creative energies. Such compatible surfaces gently help to direct and regulate the movements they support.

Conventional surfaces, on the other hand, are either passively disinterested or, worse, actual predators, feeding on motivation and spontaneity. Like the Wolf in "Little Red Riding Hood," they sprawl hungrily in front of us while we naively gasp: "Why Grandma, what big teeth you have."

The deception becomes apparent as soon as we skip merrily into the middle of a task of mild complexity—like baking a loaf of bread, cutting a sewing pattern, or writing a book. Only then do we find ourselves crowded by skylines of electric appliances, immersed in bolts of fabric, or tangled in typewriter ribbons.

Predatory conventional working surfaces stuff themselves so full that the accumulation begins to hinder the task at hand. They devour the joys of creativity and replace them with a panicky race to the finish.

A few years ago I assumed that the solution was to build surfaces fatter. I tried a huge, beer-bellied desktop, which I thought could never be filled. The following maxim became evident: Even the most expansive surface spontaneously attracts clutter. The bigger you make them, the more raven-

ous they are. I had created a hungry monster that ate bathrobes for breakfast, library books for lunch, and a snack of wallets and keys before having a tennis racket for dinner.

In dealing with the dynamics of furniture digestion, I found myself regressing to a childhood image of my grandfather's great old desk. It was lined with small drawers, countless slots, files, trays, little cabinets, and pencil holders into infinity. Although all these tended to detract from the available working space, they also helped to keep the surface that was so that the task at hand rarely had to be interrupted. Thus, animated surfaces are those that reconcile adequate open surfaces with fingertip systems of organizers.

Interchangeable Solutions

Every task is different and demands its own utensils, tools, and type of surface. An animated surface can change its face from a cutting board for a sewing project to a chopping board for vegetables to a game board or a place to eat breakfast. Its parts are interchangeable and can be rearranged at will.

If you were mixing a soufflé, for instance, an animated surface should be equipped with a hardwood chopping area, a garbage bag, utensils, bowls, appliances, and measurers, all within an arm's reach. There could also be a built-in dry sink for dirty utensils and dishware to keep them soaking and out of the way (especially when the kitchen sink is already full). A craft surface, similarly, should be convertible from a good spot for fingerprinting to a mixing table for potpourri to a place for designing paper airplanes.

The animated surface is composed of three basic parts: the tracks, the skids, and the inserts. The tracks are usually formed by the upper or lower members of an X-frame. The skids, usually built of two-by-two, fit over the tracks and are designed to accommodate both organizer inserts and plane inserts (figure 33), thereby forming a Mondrian-like grid of positive (solid) and negative (hollow) spaces.

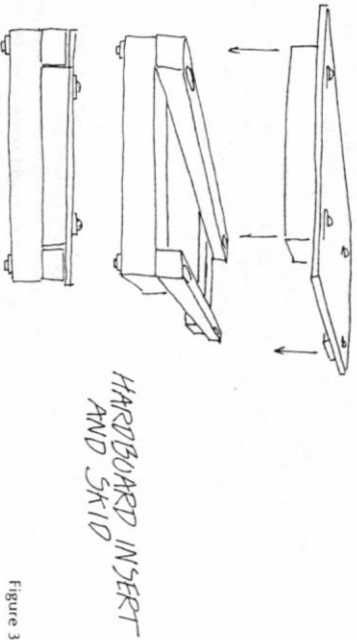


Figure 33

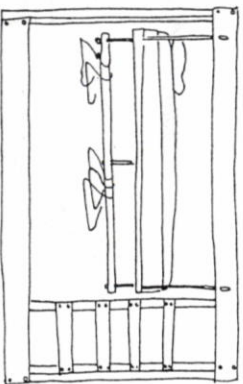
Floating Bed with Storage

This system (figure 54) includes a closet pole, stretcher shelves, racks and basin inserts, and a net pouch strung across the head of the bed. The storage variation requires at least a 44-inch clearance between floor and underside of box spring.

Floating Bed with Study

The study (figure 54) includes an animated surface, shelves, and strap seat. It requires a high ceiling and pulleys that provide a daytime clearance of at least 6½ feet. Hang shelves from upper ties—not from box spring support ties. Shelves would otherwise tip while being raised with pulleys.

BED WITH STORAGE



BED WITH STUDY

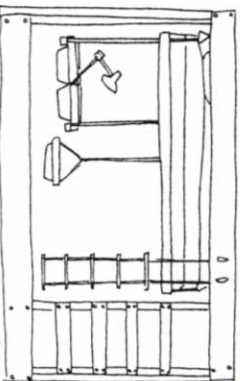


Figure 54

RIGGING DETAILS FOR PULLEY VARIATION

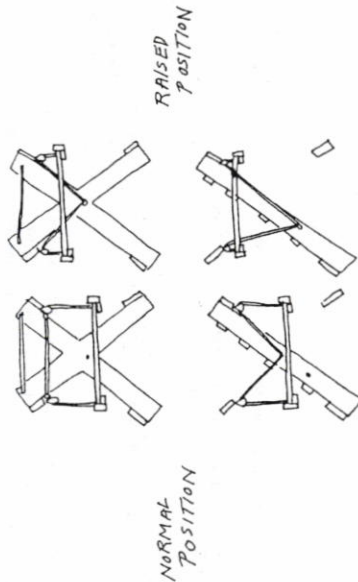
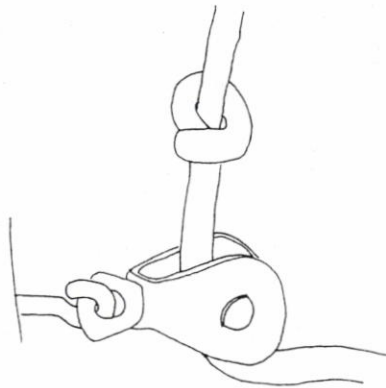


Figure 53



The pulley system shown in figure 53 includes an animated surface and two detachable strap seats. It works best with a nine-foot ceiling clearance and triples as a cozy eating alcove, a game area, or a craft center for children.

The organizer inserts need not be limited to plastic basins or clay pots. Everything from galvanized metal tubs and plastic garbage containers to dishracks and silverware organizers can contribute to surface animation. Make houseware departments and hardware stores the hunting grounds for containers and storage units to integrate with your systems.

Plane inserts can be made of Plexiglas for easy cleaning, or overlaid with glass for stencil cutting or fine hobby knife work. Hardboard is good for printing game boards right onto the surface. Hardwood has been mentioned for food preparation, and pine, pegboard, and plywood are multipurpose planes. Surfaces can be transformed into elegant dining tables by adding the wood-strung inserts described in the next section. While not in use, both plane inserts and organizer inserts can be stored in racks suspended from the open end of a lofty X-frame.

Materials:

- 2" x 2" Douglas fir for skids and plane insert stiffeners.
- Surface materials—pine, fir, plywood, hardboard, Plexiglas, etc.
- Miscellaneous containers and other organizers.
- $\frac{1}{4}$ (20) x 3 cap screws, washers, and nuts for constructing skids.
- $\frac{3}{16}$ (24) x 1½ same for assembling plane inserts.
- $\frac{1}{4}$ " manila rope.

Skids are fashioned identically to wooden frames for racks and stretcher shelves. Plan widths to accommodate the inserts you have in mind.

Some plane inserts, especially Plexiglas or hardboard, require two-by-two stiffening members to keep them from bowing. Fasten stiffeners to the plane with stove bolts and countersink their ends. The stiffeners rest on the skid and run parallel to the tracks.

Figure 34 shows how the same generalized surface depicted in the plans can be interchangeably used for a drawing table, a game table, or a food preparation surface.

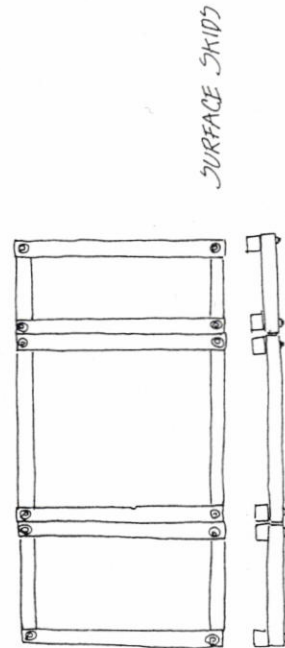
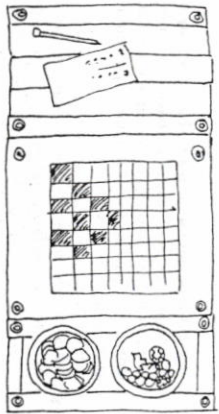
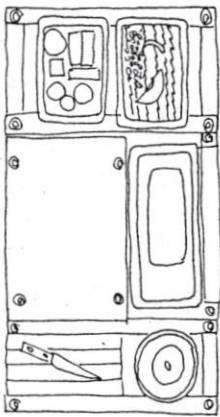


Figure 34



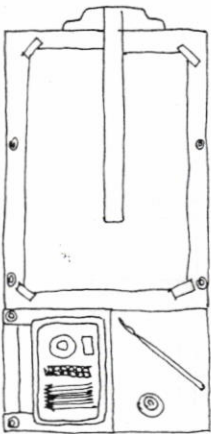
GAME SURFACE

MARKER BINS
GAME BOARD
SCORING BACK BOARD



FOOD PREPARATION SURFACE

INGREDIENTS BIN
DRY SINK
GARAGE PAW
WORKING SURFACE
CUTTING BOARD
UTENSIL HOLDER



DRAWING SURFACE

DRAWING BOARD
UTILITY SIDE BOARD
SUPPLY BIN

Materials:

- 4 pcs. $2'' \times 4'' \times 78''$ fir for support tracks.
- 2 pcs. $2'' \times 3'' \times 54''$ fir for support ties. Extra two-by-three is needed for the additional appendages used in study alcoves and breakfast nooks. Two are sufficient for the storage variation.
- 6 pcs. $\frac{1}{4}(20) \times 5\frac{1}{2}$ cap screws to assemble tracks.
- 4 pcs. $\frac{1}{4}(20) \times 3$ cap screws (2 pcs. extra for each additional support tie).
- 20 pcs. $\frac{1}{4}''$ washers.
- 10 pcs. $\frac{1}{4}(20)$ hex nuts.
- $25' \frac{1}{2}''$ manila rope for box spring rigging (see details).

Pulley Variation

While this variation is more expensive, the reward is greater systems flexibility. Pulleys facilitate the raising of your bed to the ceiling during non-sleeping hours.

The pulley variation of the floating bed requires more hardware:

Special Materials:

- 4 pcs. $3'' \times \frac{1}{4}''$ (16) eyebolts (3" long from neck to tip of shaft).
- 4 pcs. $\frac{3}{8}''$ washers.
- 4 pcs. $\frac{3}{8}(16)$ hex nuts.
- 4 pcs. heavy-duty S-hooks
- 4 pcs. heavy-duty pulleys large enough to accommodate $\frac{1}{2}''$ -diameter rope. My own bed is equipped with eyebolts (figure 52) but no pulleys. They would have added only an additional 12-inch head space, which would have been insignificant with my low 7½-foot ceiling clearance.
- 2 pcs. hook screws to anchor rigging to legs of X-braces when bed is hoisted nearly flush to the ceiling.

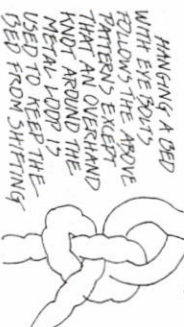


Figure 52

Box Spring Support

Plan box spring support according to how the liberated space beneath the mattress will be used. Prospective appendages (surfaces, seats, etc.) will hang from the two-by-three ties, which should be spaced accordingly (figure 51).

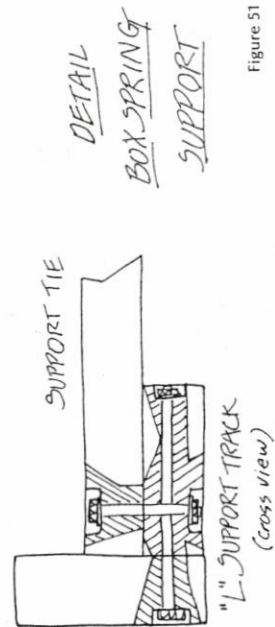
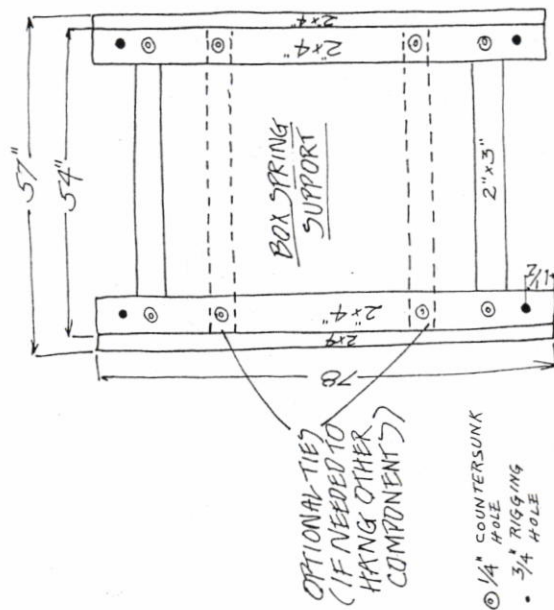


Figure 51

Wood-String Surface Inserts

Stringing lengths of wood together (figure 35) is a good way to use scrap and at the same time create large surfaces that can be rolled up when not in use.

At dinner time, the food preparation surface depicted in figure 35 has been transformed into a surface for serving meals (figure 36). The unessential plane and organizer inserts have been stored away in racks, and the wood-string epidermis has been fitted into the surface skid. One or more insert openings can be left uncovered for organizers containing napkins, condiments, utensils, warm plates, ice buckets, or whatever else you might need while eating.

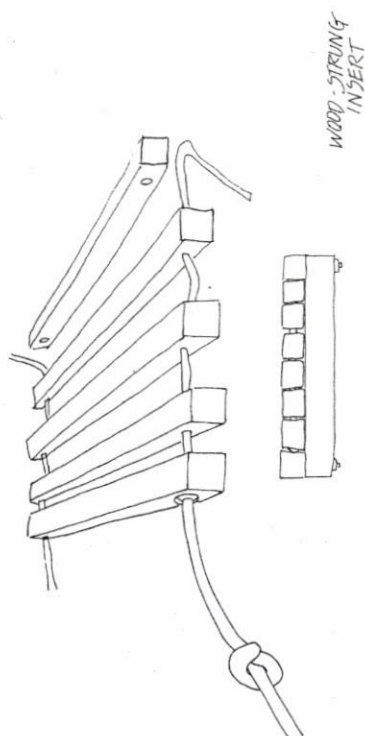


Figure 35

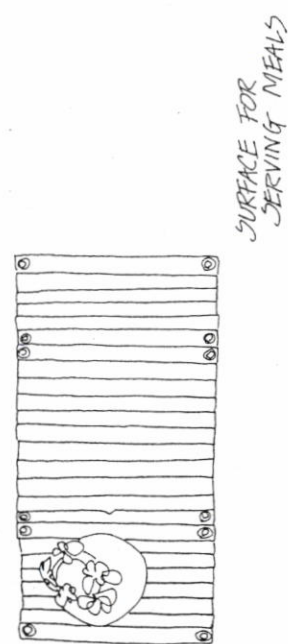
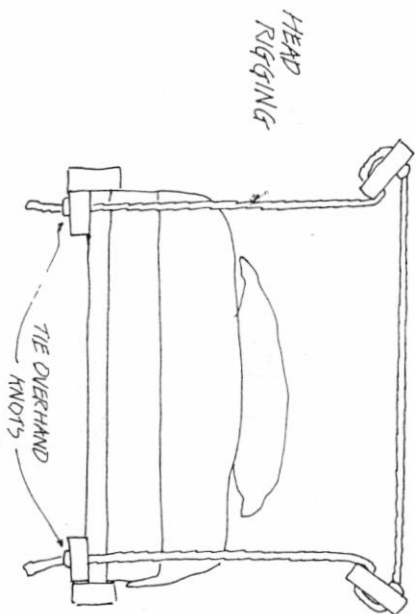
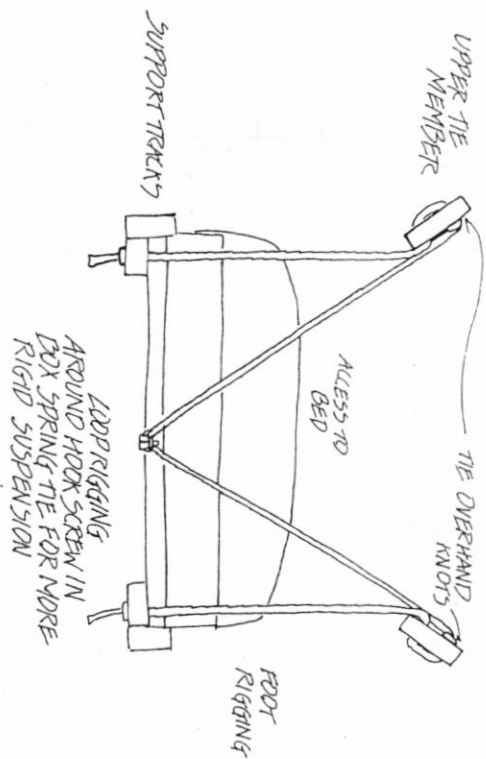


Figure 36



NO-HARDWARE
METHOD OF RIGGING
A FLOATING BED

Figure 50

X-FRAME PLAN

USE DIAGRAMS AND PROCEDURES
OUTLINED IN CHAPTER TWO
AS KEY TO ASSEMBLY.

INTERVALS FOR $1\frac{3}{8}$ " HOLES MUST
CORRESPOND WITH DOLT INTERVALS

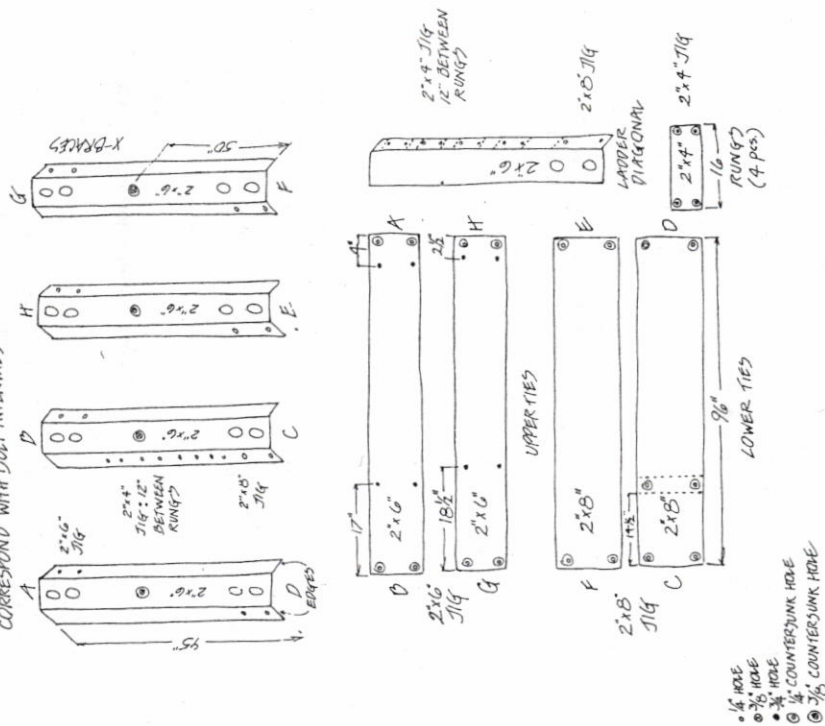
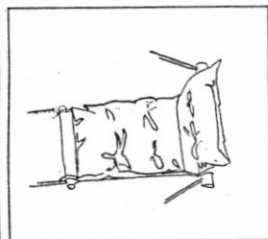


Figure 49

5

Mobile Seating, Lounging, and Sleeping

**Logistics**

Seating, lounging, and sleeping facilities, like standing armies, usually waste enormous amounts of space. They require maintenance, cautious use, and, periodically, extensive reupholstery. They also take a defense-department-sized slice of our furniture-budgets.

Why? We can sit in only one chair at a time—and yet most American homes boast legions of seats and divisions of sofas, not to mention bunkers of box springs and mattresses. Should there be a coup engineered by chairs and couches, we would be sorely outnumbered.

The organization of seats, lounges, and beds should be more democratic. Rank and position should be flexible—not stiff and stationary. Mobile seating can be effortlessly transported with you (like a guerrilla band) from one room to the next. It's featherweight, it's easy to assemble, and it can be thrown into the wash whenever a spill dictates. Mobile seats can be stored in minimal space and fitted out for less than five dollars. Mobile sofas, unlike army cots, convert into sleepers without a shin-splitting struggle and can also be easily stowed away when not in use.

With mobile strap seats, lounges, sofas, and hammocks, entertainment space can be deployed to accommodate anything from a serious face-to-face confrontation to a party where small groups of celebrants (celebrating peace of mind?) mingle, refocus as a whole, and then mix once again.

Clearly the keynote is flexibility. The typical circle-of-seats formation is suspiciously reminiscent of the desperately defensive formations of westbound wagon trains under siege. What are we so frightened of?

Strap Seats

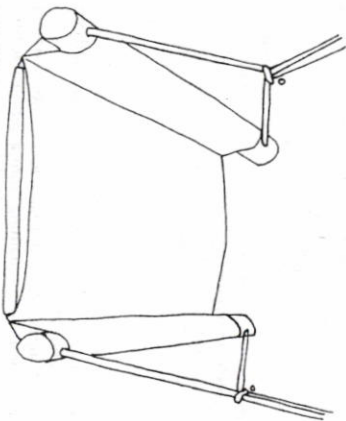
Strap seats, inspired by the swing seats behind my old elementary school, are similar to swing seats with canvas bottoms (figure 37). This variation is suspended from two hooks embedded in the upper tie member of an X-frame. These same seats serve also with conversation webs or craftkitchens or beneath floating beds.

Materials:

- a. 2 pcs. 16" x 24" (hems and sleeve allowances included) canvas, cotton duck, or other heavy-duty, washable, stretch-resistant fabric for seat.
- b. 13" x 15" x 1/4" plywood or hardboard for seat spacer.
- c. 15" x 17" scrap of cotton to cover padding on seat spacer.
- d. Staples or tacks.
- e. 25' 1/4" manila rope.
- f. Needle and heavy-duty thread or access to sewing machine.
- g. 2 pcs. heavy-duty screw hooks.
- h. 2 pcs. 1"-diameter x 16" wooden dowel.
- i. 2 pcs. small S-hooks with closed ends to clamp strands of rigging together.
- j. 1/2 lb. polyester fiber fill.

Begin by sawing the dowel, if one long piece, into two sixteen-inch seat supports. Drill 3/8-inch holes, 3/4 inch in from each of the four ends.

Next, cut two panels of fabric 16 by 24 inches and hem the long edges. Then lay the panels right side to right side (the sides that will eventually be exposed) and sew the short sides together, 1/2 inch in from the edge. Turn the band right side out and sew two seams to form sleeves for the dowel supports and the seat spacer (figure 38).



STRAP SEAT

Figure 37

tional loft beds also need high ceilings, and are usually unsuitable for dwellings with average or below-average clearances. One variation of the floating bed agilely adjusts to different heights. When not in use, the sleeping surface can be raised to the ceiling to accommodate a desk and library, a sewing machine, a game of chess, or even a breakfast-under-bed, so to speak.

Nut, bolt, and rope construction makes the floating bed relatively easy to assemble—and in half an hour it can be completely disassembled, ready to move with you anywhere. It is a lifetime investment that is virtually indestructible. Compared to the inanimate commercial sleep lofts (my motto is, do it yourself or get ripped off), floating beds are quite inexpensive. Excluding the price of your box spring and mattress, the total cost ranges from \$30 to \$60, depending on where you buy materials and how elaborate your hardware gets.

Specifications and Notes on Construction

The X-frame

8' ceiling clearance, closed ends, 6' x 8' floor area

The length and breadth of your floating bed are determined by the size of your box spring and mattress. The dimensions below (figure 49) are for standard-sized double beds (52" x 74"), but with a little arithmetic, the specifications for the members and box spring support can be modified to accommodate any size mattress. See chapter 2 for notes on building the X-frame and incorporating a ladder.

Materials:

- a. 5 pcs. 2" x 6" x 95" Douglas fir for X-braces and ladder diagonal. Increase lengths to correspond to greater ceiling heights: 107" for 9' clearances, 119" for 10' clearances, etc.
- b. 2 pcs. 2" x 6" x 96" Douglas fir for upper ties.
- c. 2 pcs. 2" x 8" x 96" Douglas fir for lower ties. If an open-ended X-frame is desired, increase the length of the upper ties according to need: 10" for a floor to ceiling wall system, 25" for a floating lounge chair.
- d. 4 pcs. 2" x 4" x 16" Douglas fir for rungs.
- e. 18 pcs. 1/4(20) x 3 3/4 cap screws.
- f. 2 pcs. 3/4(16) x 3 cap screws for scissor joints.
- g. 16 pcs. 1/4 x 3 1/2 lag screws for rungs.
- h. 52 pcs. 1/4" washers.
- i. 18 pcs. 1/4(20) hex nuts.
- j. 2 pcs. 3/4(16) hex nuts.
- k. 4 pcs. 3/8" washers.
- l. 2 pcs. hook screws. For a free-swinging bed, loop foot rigging around hook screw in ladder diagonal. For a more rigid suspension, loop foot rigging around hook screw embedded in box spring support (see rigging details in figure 50).
- m. 20' 1/4" manila rope for X-brace rigging. Tie rigging through 1 1/2-inch joint holes and join the ends with a square knot.

cessities" play on our fears either by disposing of the hours in a blink or by dilating them into agonizing eternities.

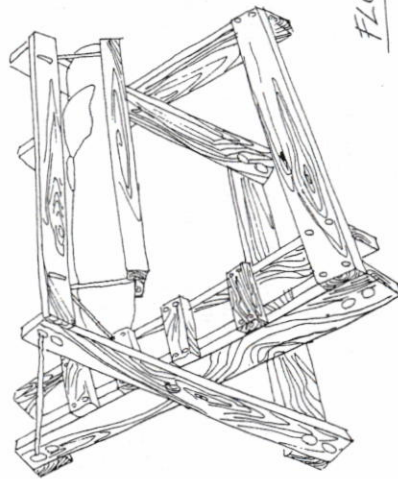
The living bedroom is a kind of primordial dream sanctuary where we retreat, recoup, sleep (and eventually die), ever to be born again. It is a place where lovers may, unmasked and unabashed, assume the skins of one another—a place for prayers of liberation and for intentions that resist our compulsion to capture and make mordant our most sacred of spaces.

New Year's Eve 1974

Instead of raising the devil on New Year's Eve, 1974, we raised our bed. Coated with sawdust, but full of that idiotic confidence that usually accompanies the creative moment, we cautiously climbed upon what has come to be called a floating bed (figure 48). The physical sensations were very gentle—as if we were lying in the bottom of a canoe. The psychic realignments dawned on us only gradually. It seemed as though this was where a bed was always meant to be—suspended somewhere between the flotsam and jetsam of everyday and the carefree constellations of a starry night.

From a more practical perspective, the bed-raising had the immediate result of making accessible the wasted volume that had been nonchalantly hanging above our heads for so long. The end result was the liberation of one entire room of our three-room cottage. Other life-activities—studying, reading, writing, meeting and putting up friends for the night—rushed to fill the vacuum caused by our tampering with the physics of traditional furniture arrangement.

The bed itself is an extremely animated piece of furniture. Most conventional loft beds are built-in, stationary affairs that require hammering and drilling into walls, ceilings, and floors. The floating bed is freestanding and can easily be erected without damage to a rented apartment. Conven-



FLOATING BED

Figure 48

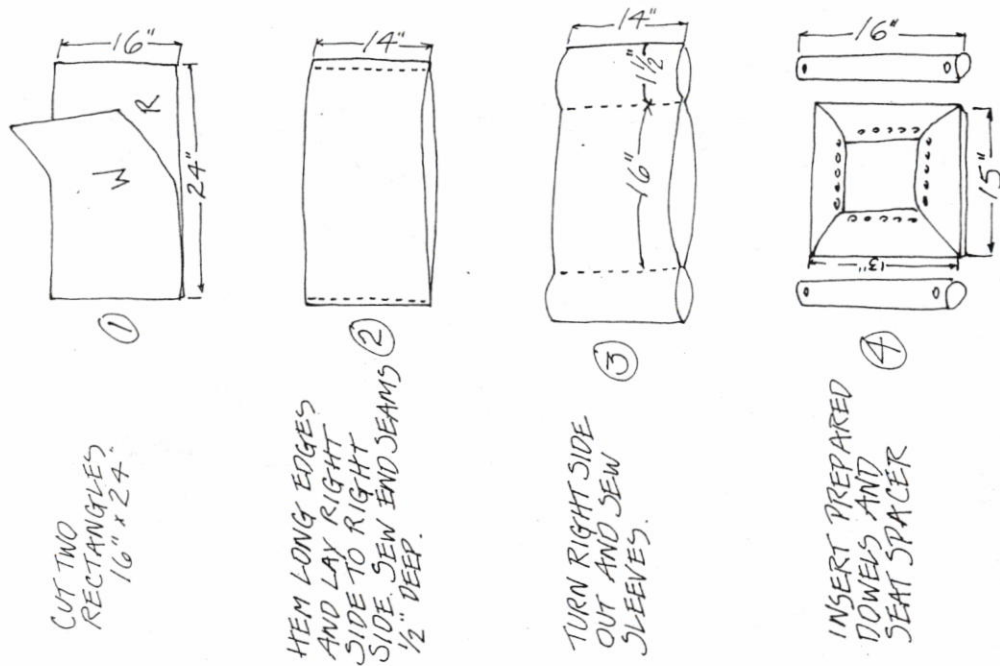
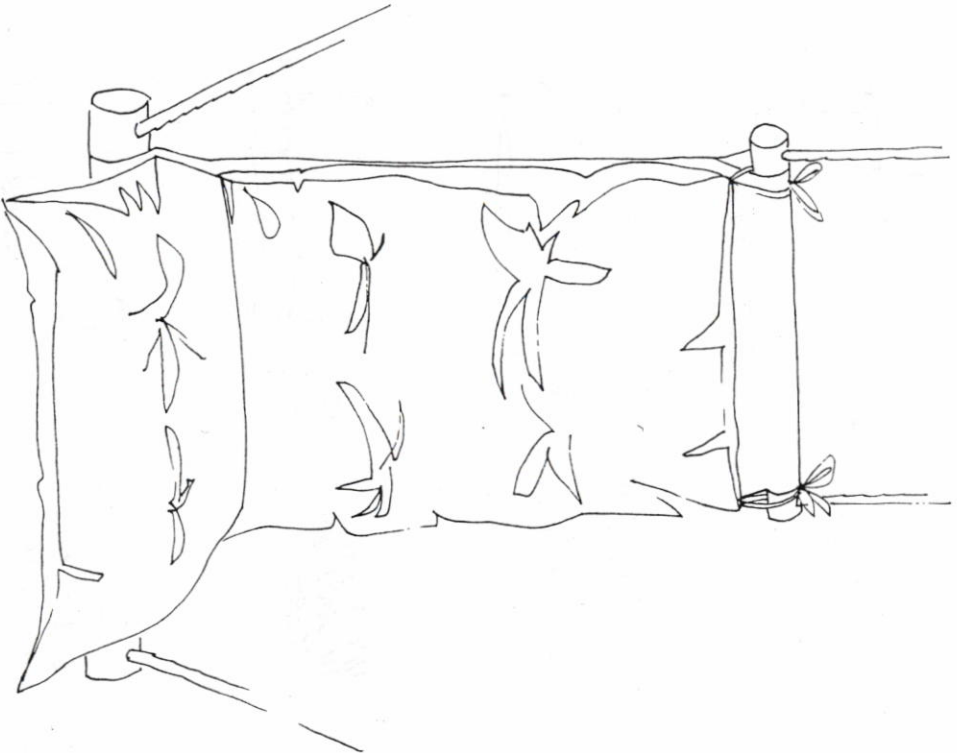


Figure 38

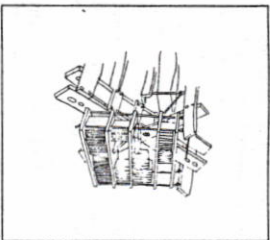


FLOATING LOUNGÉ

Figure 39

7

Floating Beds



The Poetics of Bed-space

Beds, floating or otherwise, are and have always been more than wood, foam, and springs. They sail (or sink) in the central sea of our psychic dream-streams and navigate us from the end of one day to the beginning of another. Gentle tides renew us, and, from the depths of puff-quills and pillows, we come forth reborn.

In our most subconscious and archetypal inklings, bed space is the intersection of death and birth, fear and hope. It is a space that is suspended over past memories (dust) and below the blank, ceiling-white unknowns of the future. Exploring further, we find that bed space borders on both terrifying voids and enchanting realms. The fantasies of childhood speak correspondingly of Never-Never Lands outside the nursery window, Narnias behind wardrobes, Wonderlands through looking glasses, and Oz hovering close by our very pillows.

Conventional bedrooms are timidly and rigidly conceived, rarely rearranged or tampered with. Bedroom windows are scattered about as if to reassure us that the outside is still there. Headboards and bedposts reminding headstones or jail bars protect as well as imprison. Guardians of oak or maple stand to right and left in the guise of unbudgeably rational bureaus and ego-assisting vanities. Anxiously we dial luminous alarms and televisions to hold our realities together until tomorrow—but even these addictive “re-

Prepare the seat spacer by padding one face of a plywood rectangle with polyester fiber or batting and stretching fabric over it to hold it in place. Tack or staple the excess fabric to the back of the plywood, thus forming a pad. After the seat is rigged, slip the pad into its sleeve. Remove it whenever the seat needs washing.

These are standard measures and can be adjusted to the shape of your body. Pin the seams experimentally until you find suitable dimensions. Space the hook screws in the upper tie member at least 30 inches apart. This prevents the seat from hugging too tightly. Clamp small S-hooks to the rigging as shown in figure 37.

Floating Lounges

Lounges are super-sized straps used lengthwise instead of widthwise. The advantages of changing the strap's direction is that it can now give support to more of your body—from head to knees (figure 39). A lounge is most comfortable when combined with a quilt-cushion to prevent the bottom dowl from pressing against the back of your thighs.

Materials:

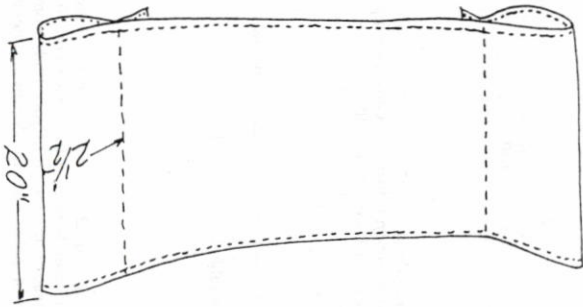
- a. 22" width (with hem allowance) canvas for seat strap; see below for length.
- b. 2 pcs. 26" width washable and durable fabric for cushion.
- c. 2 pcs. 22" x 1"-diameter wooden dowl or closet pole.
- d. Sewing apparatus.
- e. 6 lbs. polyester fiber or other cushion fill.
- f. 20' 1/4" manila rope.
- g. 4 pcs. heavy-duty hook screws.

Prepare lounge supports by sawing two 22 inch lengths, if one long piece, of dowl or pole. Drill 3/8-inch holes 1/4 inch in from each end. To obtain the length of the seat strap, measure the length of your body from the top of your head to the knee; add 14 inches extra for sleeves and hems (figure 40-1).

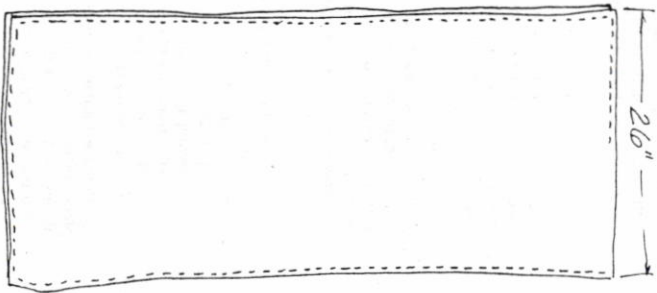
To make a body-lounge cushion, you'll need two pieces of washable, well-wearing fabric, 26 inches wide and about the same length as the strap support—plus a few scraps for tie strings. Extra inches have been allowed in each direction; because when the cushion is puffed with stuffing, it will bunch up into a smaller size.

Begin the cushion by laying the rectangles together, right side to right side. Sew a 1/2-inch seam around the perimeter, leaving six inches unsewn for stuffing. Slip in batting or polyester fill and close the hole by hand. Tack the cushion at intervals or stitch a pattern over the entire surface as if you were making a quilt (figure 40-2, 3). This keeps the stuffing from shifting. Ties sewn at the cushion's head and fastened to the pole support will help keep everything in place.

Rig the floating lounge anywhere on the upper ties of an X-frame. They can hang within the frame or be cantilevered from an open end. Attach the lounge to the ties with four heavy-duty hook screws spaced at the corners of an imaginary rectangle that measures 20 1/2 inches wide and at least 38 inches deep.

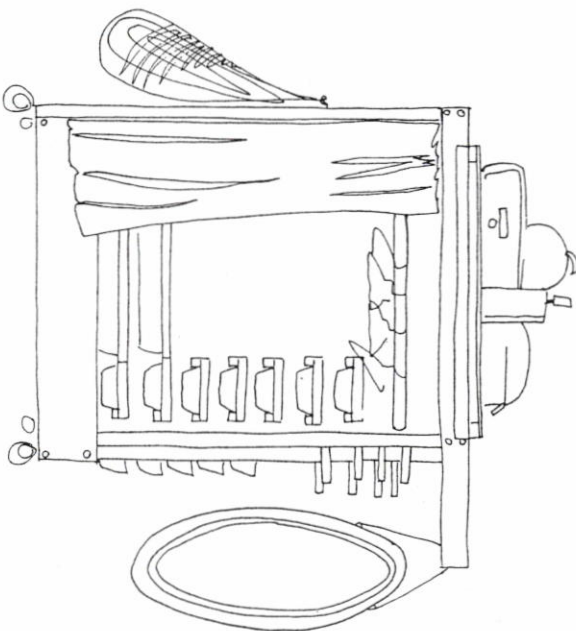


① HEM EDGES AND SEW SLEEVES.



② LAY RECTANGLES FOR QUILT CUSHION RIGHT SIDE TO RIGHT SIDE AND SEW SEAM AROUND PERIMETER LEAVE 10" OPENING.

- 2 pcs. $\frac{1}{4}$ (20) x 3 cap screws
- 6 pcs. $\frac{1}{4}$ x $1\frac{1}{2}$ lag screws*
- 18 pcs. $\frac{1}{4}$ (20) hex nuts
- 42 pcs. $\frac{1}{4}$ washers
- 55' $\frac{1}{4}$ " manila rope
- 2 pcs. $\frac{1}{4}$ x $3\frac{1}{2}$ lag screws*
- 3' scrap piece of 2" x 3"



- NETSACK FOR LAUNDRY
- MINI-MIRROR
- CLOTHING PEGS
- SHOE DANG
- CLOSET RING
- DRAIN INSECTS
- CLOTH-STRETCHED SHIRT/IES
- X-FRAME WITH CASTERS

FANTASY CLOSET

Figure 47

tuted. Not only is it less expensive, but when it's stiffened by two-by-two it will not bend under heavy loads.

Materials:

- 5 pcs. 1" x 14" x 30" pine shelving.
- 1 pc. 1" x 14" x 13" pine half-shelving.
- 1 pc. 1" x 14" x 17" pine half-shelving.

Shelf lengths can, of course, be changed to suit your needs. My half-shelves were governed by the dimensions of my chessboard and the dust cover of my turntable.

- 55 1/4"-diameter manila rope to hang shelves. Use scraps for X-brace rigging.

Fantasy Closets

Closets are traditionally entrances to other worlds, but no one ever said that magic portals couldn't be portable. Closet systems can be as simple as a pole suspended from the box-spring support of a floating bed—or as multifaceted as my fantasy closet—fantasy, because I haven't the need to build one and, as yet, it exists only in my imagination.

The fantasy closet (figure 47) would roll into any position and be composed of all the components discussed in the chapter on storage. A closet on wheels (bicycle, baby carriage, wagon, or the stemmed ball-and-socket variety of casters) means accessibility from all sides whether or not you use it as a room divider or a screen for dressing.

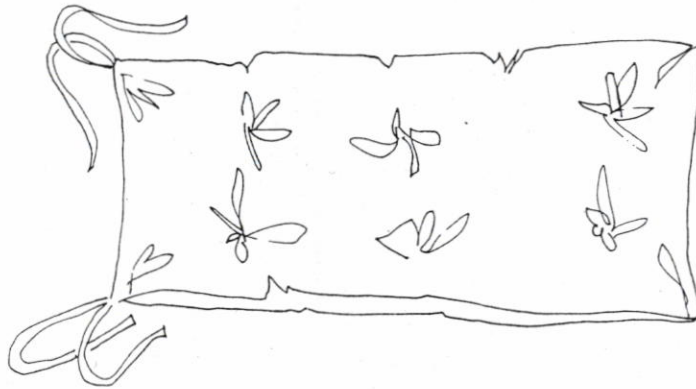
The closet would be built from a single open-ended X-frame similar in proportion to the wall system discussed above. A laundry sack, a body-length mirror, a shoe bag, or clothing pegs could be added to the ends. The upper level could act as a mini-attic, and the middle region as a place to hang clothing. It could also accommodate twelve basin inserts for slippers, shoes, and loose articles of clothing, like ties, belts, and beads. The lower levels would include stretcher shelves for off-season clothing. Refer to chapter three for a choice of storage components; design yours on paper first, with attention to your own special needs.

To add clothing pegs to the X-brace, drill 1/2-inch diameter holes, five inches apart and one inch deep. Tap 1/2-inch-by-five-inch wooden dowels into the holes.

Curtains made of Indian cotton and hung from the upper tie of an extended arm would also be appealing—can't say why—maybe because they would make the closet a good hiding place in a rainy-day game of hide and seek.

Shopping List for Swing Set Bookshelves (with magazine rack*)

- 4 pcs. 2" x 3" x 8' Douglas fir
- 1 pc. 2" x 4" x 8' Douglas fir
- 1 pc. 2" x 10" x 8' Douglas fir
- 1 pc. 1/4" x 3" x 10' lattice board*
- 2 pcs. 1" x 14" x 8' pine shelving
- 16 pcs. 1/4(20) x 4 1/2 cap screws



③ TURN RIGHT SIDE OUT, STUFF, FINISH OPENING BY HAND, TACK AT REGULAR INTERVALS AND ADD TIES.

Figure 40

Convertible Sofas

A convertible sofa is yet another modification of the basic strap. It resembles a floating-lounge seat that has been shortened lengthwise and multiplied in width to seat more than one person. By lengthening the head rigging and adding two spacer sticks, a sofa converts into a comfortable floating cot.

Materials:

- 2 pcs. 36" x 60" canvas, cotton duck, or equivalent.
- 4 pcs. 40" x 48" washable, well-wearing fabric for quilt cushions.
- 2 pcs. 2" x 3" x 6' Douglas fir for support members.
- 20' 1/4" manila rope.
- 4 pcs. heavy-duty hook screws.
- Polyester fiber fill or batting.
- Sewing apparatus and heavy-duty thread.
- 2 pcs. closet pole 30" long.
- 4 pcs. 1/8" x 4" wooden dowels (bought by the stick).

The convertible love seat sofa (figure 41) is composed of two supportive panels and matching quilt-cushions. Cut two rectangles of fabric, each 36 by 60 inches, and sew into sofa panels according to the pattern in figure 42. If desired, cut four rectangles, 40 by 48 inches, for quilt cushions. Sew into sacks and, before closing, fill with polyester fiber or cotton batting. Stitch or tack at intervals.

For the support members, saw, sand, and oil two 72-inch lengths of two-by-three. Drill 1/8-inch holes as shown in figure 43. Likewise, saw, sand, and oil two 30-inch-long spacer sticks. Drill 1/8-inch holes into each end and insert 1/8-by-4-inch wooden dowels, leaving about an inch exposed.

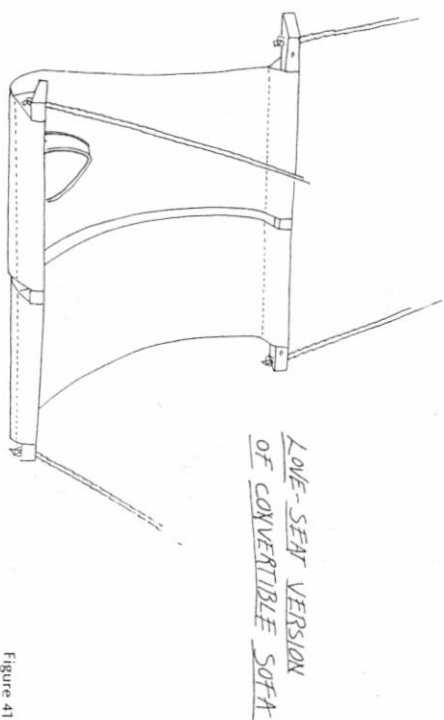


Figure 41

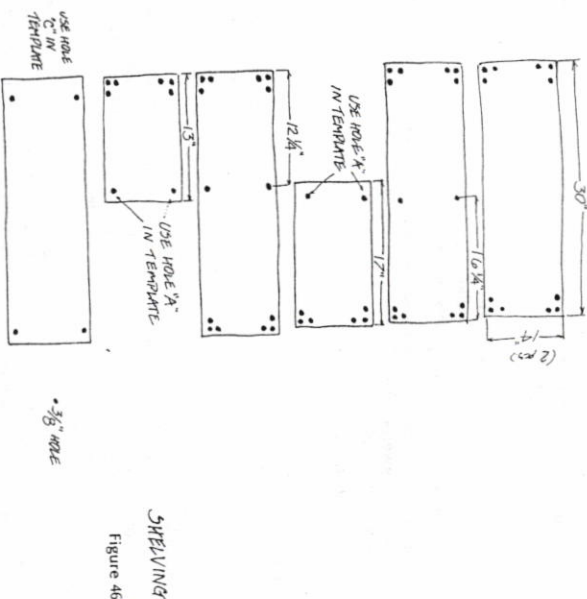


Figure 46

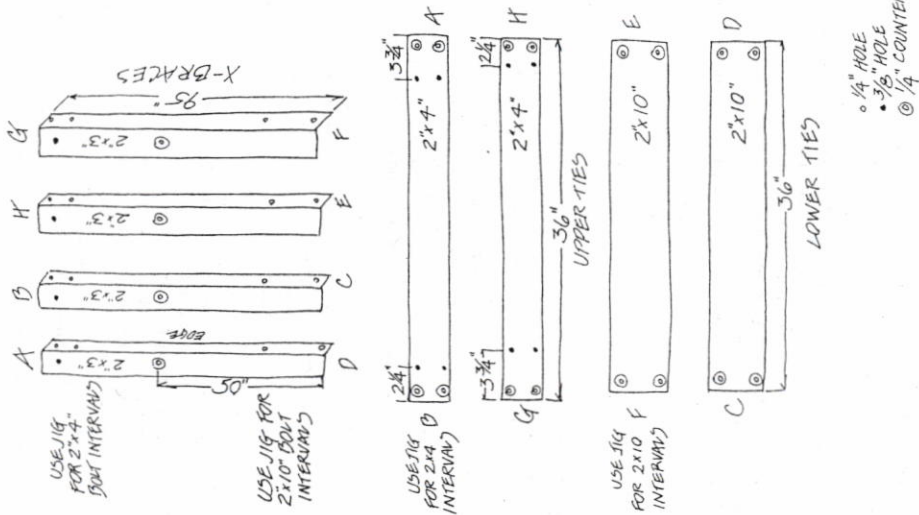
Hemlock can be substituted for Douglas fir in this unit. It has the advantage of having been dried beforehand, whereas Douglas fir, especially the larger dimensions, is usually still green and sappy when you buy it. Hemlock has the disadvantage of being not quite as strong and more prone to splits and splinters.

- 3 pcs. 1/4" x 3" x 36" lattice board and a 3' scrap of 2" x 3" for optional magazine or newspaper storage at the bottom of the X-frame.
- 16 pcs. 1/4(20) x 4 1/2 cap screws (1/4(20) x 3 1/2 if X-braces are made from 2" x 2").
- 2 pcs. 1/4(20) x 3 cap screws for scissor joints.
- 42 pcs. 1/4" washers.
- 18 pcs. 1/4(20) hex nuts.
- 6 pcs. 1/4 x 1 1/2 lag screws for attaching lattice-board front to magazine rack.
- 2 pcs. 1/4 x 3 1/2 lag screws for securing base to magazine rack between lattice and lower tile.

The Shelving

Five double-capacity shelves and two half-shelves

Figure 46 shows shelf layouts. I used pine, but hardboard can be substituted.



The sofa is suspended from hook screws embedded in the upper ties of a conversation web, or in a system of your own imagination. To convert it to a floating cot, adjust the length of the head rigging until it is equal in length to the foot rigging. Insert dowel-studded spacer sticks to keep the cot from swallowing your guest.

Four- and six-seater convertible sofa/cots require heavier support members. Instead of two-by-threes, use two-by-fours for sofas longer than six feet, and an additional rope support to cut the support member span.

Hammock Renaissance

The hammock is a particularly well-suited component in social systems of living space. It is universally available and relatively inexpensive. The Indians of southern Mexico carry their hammocks with them when visiting, when staying in native hotels, and all around their own dwellings. Hooks are installed in every room, providing a flexible living system that can accommodate large numbers of visiting friends and relatives. Talk your own friends into making or buying their own hammocks, and unjustifiable guest rooms will be liberated.

Before you go out and buy one, study the vast variety of imported and domestic hammocks available. I prefer the light, airy, netlike hammocks—the Mayan, the Twin Oaks or Pauley Island hammocks, or the Sprang hammock. Unlike the ever-present frigid air conditioning, they cool by allowing the air to circulate all around your body. An excellent introduction to hammocks and hammock making is Denison Andrews's *How to Make Your Own Hammock and Lie in It*. This manual is published by the Workman Publishing Company.

Hammocks are lightweight and detachable. They can be folded into small bundles and can be transported to a number of locations, inside or out. Like the floating bed, they add a touch of lullaby to your living space.

if by chance, an idea appeared in the knotty migraine of my head. Why not cross a pair of two-by-twos, scissorlike, and join them with a metal bolt? The arms had to be tied together to keep them from doing a split when stood upright. Adding the tie members was a simple matter, and thus the X-frame prototype was born. Sometimes solutions can be so beautifully unexpected.

The final result was a versatile bookshelf that doubles and triples as a magazine rack, stereo and record cabinet, and display unit for plants and pottery—and can also be used as a somewhat diaphanous room divider, handy for forming cozy alcoves. When functioning as a divider, its greatest advantage is that books can be shelved from either side, thus doubling capacity.

This wall system, unlike many others, is freestanding and can be folded to less than half its normal width for easy moving or storage. It can also be disassembled completely in a few moments since it's constructed with bolts and rope. Like the other designs in this book, these shelves are built to soften the nests of people—not to satisfy our seemingly compulsive desire to live in stifling fortresses filled with expensive, nonfunctional monstrosities.

Swing set bookshelves combine the principle of limbs in tension and the technique of hanging shelves. The X-braces make construction simple for those of us who would rather not get into routers and dovetails. Rope suspension allows unlimited flexibility in positioning shelves according to personal needs. The result of these techniques is an extremely lightweight unit costing less than one-third the price of an equivalent conventional model. The shelves are sound and stable under heavy loads and have been tested with more than 250 pounds of books and records (and all this with me doing pull-ups from the upper tie). I stopped at 250 pounds only because I couldn't fit anything else on the shelves.

Specifications and Notes on Construction

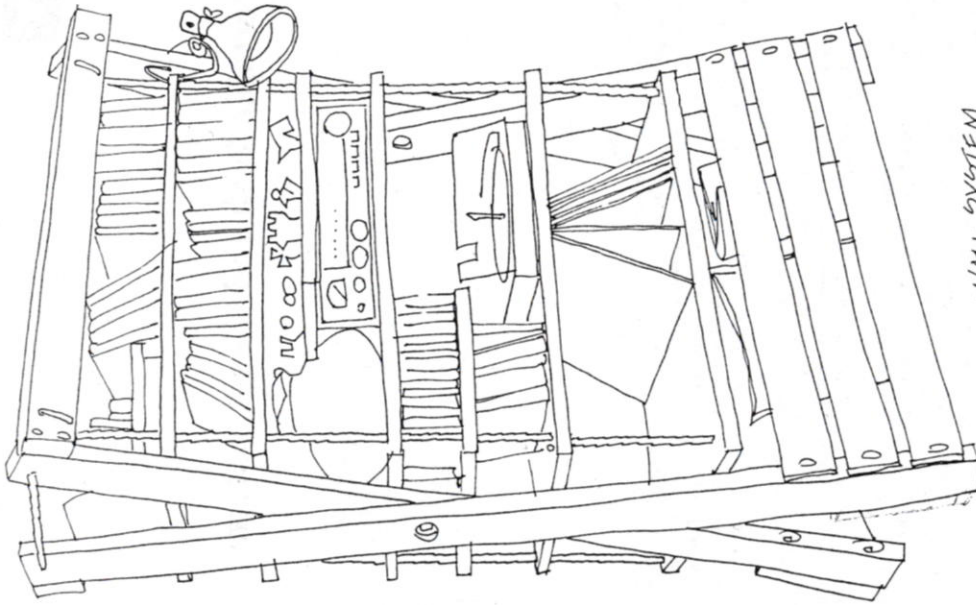
The X-frame

Ceiling clearance 8', closed ends, 23" x 38" floor area

Build the X-frame (figure 45) according to the procedure outlined in chapter two. Note that when a magazine rack is included, the front lower tie member is bolted to the inside of the X-braces and lattice strips are screwed to the outside—thereby forming a pocket, bottomed by a scrap piece of two-by-three. Recess the inside lower member one inch from the end or "toe" of the X-braces so it will not interfere with the structure resting evenly on the floor.

Materials:

- a. 4 pcs. 2" x 3" x 95" for X-braces; 2" x 2" can be used if the desired bookshelf height is under 6'.
- b. 2 pcs. 2" x 4" x 36" for upper ties; extend one tie a few extra inches if a limb to hang greenery is desired.
- c. 2 pcs. 2" x 10" x 36" for lower ties. The width of this standard version is almost 38" and the depth, about 23" at the base.

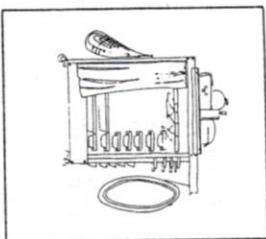


WALL SYSTEM

Figure 44

Part 2 The Systems

Portable Wall and Closet Systems



Swing Set Bookshelves

The swing set bookshelf (figure 44) is the closest thing to an instant bookcase since the advent of cinder blocks and pressboard. Although the cumbersome brick and block shelves are simpler to slap together, their stability is inversely proportional to their height. Moreover, the craftsmanship involved in building a swing set bookshelf will leave you with a quiet sense of humble halallelujah—an even scarcer commodity than wood in these days of synthetic lifestyles.

Born of necessity, the bookshelf was my initial experiment in creating integrated systems of furniture. We needed space for books, albums, and our turntable and receiver. The lower tie member was modified into a magazine rack to take care of all the loose periodicals that seem to generate spontaneously.

The original idea was to build a large, three-dimensional rectangle of two-by-two Douglas fir—from which I had intended to hang pine shelves with rope. After struggling for an entire afternoon, trying to make the members rigid, I gave up. Anyone who has ever tried to join three pieces of wood at one point, all perpendicular to one another, knows that it's not easy.

In a fit of frustration at my ineptitude, I left the tangle of wood, glue, and nails, was ready to write off the cost of the wood as a total loss. Then, as